

NP6060

SERVICE MANUAL

(for 115V)

REVISION 1

Canon

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PREFACE

This SERVICE MANUAL is intended to provide the service engineer with basic guidelines needed to service the NP6060 in the field.

The NP6060 is designed to accommodate the following options to enable fully automated copying work:

1. Sorter
2. ADF-A1
3. Computer form feeder (C.F.F.)

See the respective service manuals for the sorter and the document feeder; the C.F.F. is discussed in this manual.

CHAPTER 1 GENERAL DESCRIPTION gives the machine's features, specifications, and a discussion of how to operate it.

CHAPTER 2 COPYING PROCESS discusses each of the steps the machine uses to produce copies.

CHAPTER 3 OPERATIONS AND TIMING provides principles of the machine's mechanical and electrical operations by function, discusses timing of these operations, and gives an outline of the machine's electrical circuitry.

CHAPTER 4 MECHANICAL SYSTEM discusses the machine's mechanical components and gives step-by-step instructions for disassembly, assembly, and adjustment.

CHAPTER 5 INSTALLATION sets forth considerations to make when deciding on a site of installation and gives step-by-step instructions for installation.

CHAPTER 6 MAINTENANCE AND SERVICING gives tables of periodically replaced parts and durables and a periodical servicing chart.

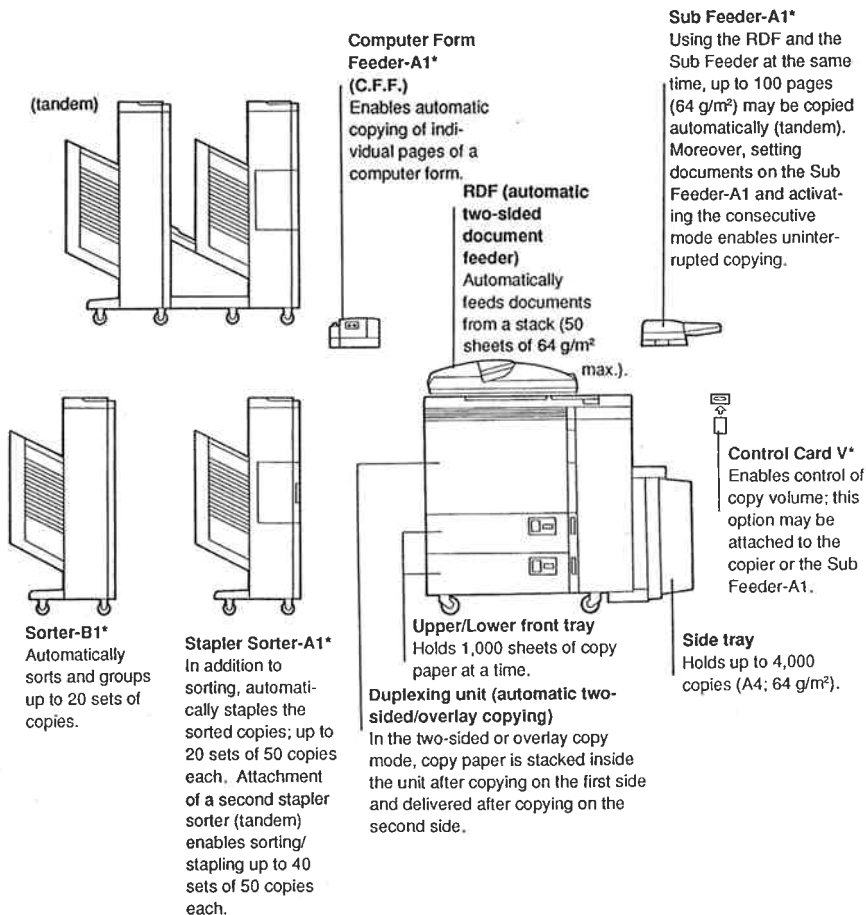
In addition to the above chapters, this manual contains a general circuit diagram and PCB diagrams.

Some changes may be made to the machine for product improvement, and such changes will be released in the form of a *Service Information Bulletin* as necessary.

Each service engineer is encouraged to have a thorough understanding of the contents of this manual and the aforementioned Service Information Bulletins for acquisition of the skills needed to service the machine and identify problems.

System Configuration

The NP6060 may be configured as follows with various options (*).



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CHAPTER 1

GENERAL DESCRIPTION

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1. FEATURES

1. High-speed copying and large-capacity paper compartments.

- As many as 60 copies (A4) may be made per minute; 39 copies on B4.
- The front loading design takes up less office space.
- A total of 6,100 sheets may be stored ready for use at a time; 1,000 each in the upper and lower trays (front), 4,000 in the side tray, and 100 in the multifeeder.

2. Accepts computer forms with the addition of the C.F.F. (option).

- With the addition of the C.F.F. (computer form feeder), the copier prints the output from a computer on computer forms continuously.
- The document may be as wide as 8 to 15 inches and as long as 7 to 12 inches.
- A computer form (80 g/m²) may be as long as an equivalent of 500 cut sheets in the continuous mode.

3. Fewer paper jams, owing to a new pick-up mechanism.

- Paper is sent using the *center reference* mechanism, enabling precise paper handling. In addition, the mechanism is controlled by fuzzy logic for finer control.

4. High durability, and stable image quality.

- Canon's own A-Si (amorphous silicon) photo-sensitive drum ensures a long drum life, and its single-component projection development method generates high-quality images copy after copy.
- The AE (auto exposure control) mechanism and the photo mode make sure that newspapers and diazo documents are copied at optimum density. The high-quality projection toner produces faithful half-tone copies of photos.

5. Full range of basic features meeting varying copy needs.

- The highly productive duplexing mechanism and a document feeder enables high speed copying even in the two-sided copy mode.
- The independent x and y zoom lenses allow a reduction/enlargement of 50% to 200%.
- The copy paper may be between A3 (11" x 17") and B5 (STMT-R) and of varying types.

6. Graphic display and wide-ranging extra features.

- The user friendly control panel is equipped with a liquid crystal display that explains features in easy-to-understand terms.
- The cover mode allows insertion of colored covers or inside covers between specified pages.
- Liquid Crystal Display
- Auto Clear
- Pre-Heat
- Interrupt
- Page Separate
- Document Frame Erase
- Photo
- OHP Inside (w/ RDF in use)
- Zoom Program
- ID
- APS/AMS (w/ RF in use)
- Auto Shut-Off
- Mixed Document Sizes
- Auto Start
- Auto Two-Sided/Overlay
- Sheet Frame Erase
- Cover/Back/Inside (w/ RDF in use)
- Mode Memory
- Auto Wire Clean

7. A complete set of options for high-speed copying.

- The copier as well as its options are all designed for quiet operation to provide a good office environment.
- The options are designed to work side by side with the copier for higher productivity (60 copies/minute; A4/LTR, horizontal).

RDF-A1: automatic document feeder of a recirculating type; 60 copies/minute in AE as well.

Stapler Sorter-A1: 20-bin sorter for automatic stapling of grouped/sorted copies; tandem configuration possible.

Sorter B1: Sorter for grouping/sorting copies; tandem configuration possible.

C.F.F.: computer form feeder for automatic continuous copying; 60 copies/minute.

Sub Feeder: document feeder to enable automatic start-up and continuous copying of up to 100 documents when used with RDF.

Control Card V: control card unit for controlling copy volume (up to 200 groups); may be attached to copier's control panel or sub feeder.

II. SPECIFICATIONS

A. NP6060

1. Construction

Body	Console
Copyboard	Fixed
Light source	Halogen lamp (70V, 180W)
Lens	Zoom
Photosensitive medium	Amorphous silicon

2. Type

2. Type

Copying		Indirect electrostatic
Charging		Corona
Exposure		Slit (moving light source)
Copy density		Automatic or Manual
Development		Dry (projection)
Pick-up	Automatic	2 front trays; Side tray
	Manual	Multifeeder (10 mm deep; 100 sheets of 80 g/m ²)
Transfer		Corona
Separation		Corona (electrostatic)
Cleaning		Blade
Fixing		Heat roller (880W + 340W)

3. Performance

Document		Sheet, Book, 3-D (4.4 lb. max./2 kg max.)
Document size		A3 (11" x17")
Re-production ratio	DIRECT	1:1 ($\pm 0.5\%$)
	REDUCE I	1:0.500 ($\pm 1.0\%$)
	REDUCE II	1:0.647 ($\pm 1.0\%$)
	REDUCE III	1:0.733 ($\pm 1.0\%$)
	REDUCE IV	1:0.786 ($\pm 1.0\%$)
	ENLARGE I	1:2.000 ($\pm 1.0\%$)
	ENLARGE II	1:1.294 ($\pm 1.0\%$)
	ENLARGE III	1:1.124 ($\pm 1.0\%$)
ZOOM		1:0.500 to 2.000 ($\pm 1.0\%$)
Wait time		6 min or less (68°F/20°C)
First copy		3.1 sec (A4; non-AE; pick-up from side tray)
Continuous		999 sheets max.
Copying size		11" x17" (A3) max.; B5 min.
Copy paper	Front tray	- Plain paper (64 to 80 g/m²) A3, B4, A4, B5, A4R, B5R, 11"x17", LGL, LTR, LTR-R - Tracing paper (SM-1)* A3, B4, A4, B5, A4R, B5R - Colored paper (Canon-recommended) B4, A4
	Side tray	- Plain paper (64 to 80 g/m²) A4, B5, LTR, LTR-R, LGL; B4 (100V model only) - Colored paper (Canon-recommended) A4; B4 (100V model only)

Copy paper	Multifeeder		• Plain paper (64 to 80 g/m²) A3, B4, A4, B5, A4R, B5R, 11"×17", LGL, LTR, LTR-R, STMT-R* • Tracing paper (SM-1)* A3, B4, A4, B5, A4R, B5R • OHP film* A4, LTR • Colored paper (Canon-recommended) B4, A4 • Label sheet (Canon-recommended) A4, LTR • Thick paper (81 to 128 g/m²)*
	Two-sided	Automatic	• Plain paper (64 to 80 g/m²) A3, B4, A4, B5, A4R, B5R, 11"×17", LGL, LTR, LTR-R • Colored paper* (Canon-recommended)
		Multifeeder	• Plain paper (64 to 80 g/m²) A3, B4, A4, B5, A4R, B5R, 11"×17", LGL, LTR, LTR-R, STMT-R • Colored paper* (Canon-recommended) A4, B4 • Thick paper (81 to 128 g/m²)
	Overlay	Automatic	• Plain paper (64 to 80 g/m²) A3, B4, A4, B5, A4R, B5R, 11"×17", LGL, LTR, LTR-R • Colored paper* (Canon-recommended) B4, A4
		Multifeeder	• Plain paper (64 to 80 g/m²) A3, B4, A4, B5, A4R, B5R, 11"×17", LGL, LTR, LTR-R, STMT-R • Colored paper* (Canon-recommended) B4, A4 • Thick paper (81 to 128 g/m²)
Tray	Claw		Not used.
	Upper/Lower front tray		107.5 mm deep (1,000 each of 80 g/m ²)
	Side tray		410 mm deep (4,000 sheets of LTR/LTR-R, 2,500 sheets of LGL; both of 64 g/m ²)
Copy tray			250 sheets (approx.; A3 of 80 g/m ²)
Non-image width	Leading edge		4.0 +1.5, -1.0 mm in DIRECT (4.0 +1.5, -1.0 mm in ENLARGE/REDUCE, TWO-SIDED, OVERLAY)
	Trailing edge		2.0 ±1.0 mm (2.0 ±1.0 mm in ENLARGE/REDUCE, TWO-SIDED, OVERLAY)
	Left/Right (1st side; w/ standard frame erasing)		2.75 ±2.3 mm (A4R, B5R, B4, A3R, LTR-R); 3.0 ±2.55 mm (other sizes)
	Left/Right (2nd side; w/ standard frame erasing)		2.75 ±2.3 mm (A4R, B5R, B4, A3, LTR-R); 3.0 ±2.55 mm (other sizes)

* May be used but may not feed as expected.

Auto clear	Available. (2 min standard; may be varied between 0 and 9 min in 1-min increment)
Auto shutoff	Available. (2 hr. standard; may be varied between 0 and 300 min in 10-min increment)
Option	Stapler Sorter-A1, Sorter-B1, Sub Feeder-A1, Computer Form Feeder-A1

4. Others

Operating environment	Temperature	59°F to 86°F (15° to 30°C)
	Humidity	5% to 80%
	Atmospheric pressure	0.6 to 1 atm
Power supply		Serial No.
	115V 60 Hz 115V 60 Hz (A/B)	NEW XXXXX/ NAE XXXXX NNB XXXXX/ NAF XXXXX
Power consumption	Maximum	1.5 kW or less
	Standby	0.0269 kWh (reference only)
	Continuous copying	1.320 kWh (reference only)
Noise	Copying	79 dB or less (ISO)
	Standby	40 dB or less (1 m from machine)
Ozone (average over 8 hr.)		0.10 ppm or less
Dimensions	Width	41.3 in. (1050 mm)
	Depth	28.1 in. (714 mm)
	Height	43.1 in. (1095 mm)
Weight (including RF)		469 lb (225 kg)
Consumables	Copy paper	Keep wrapped to protect against humidity.
	Toner	Avoid direct sunlight, and store under 104°F (40°C), 85% or less.

Reproduction		Size	Copy size	Copies
DIRECT		11" x 17"	11" x 17"	30
		LTR	LTR	60
		LGL	LGL	40
		LTR-R	LTR-R	49
		STMT-R	STMT-R	60
REDUCE	II	11" x 17" → LTR-R	LTR-R	46
	III	11" x 17" → LGL	LGL	40
	IV	LGL → LTR-R	LTR-R	48
ENLARGE	II	LGL → 11" x 17"	11" x 17"	30
	III	LTR-R → 11" x 17"	11" x 17"	30

Table 1-1 Copy Speed (copier only)

Specifications subject to change without notice.
--

B. Computer Form Feeder-A1 (C.F.F.)

Item	Specifications	Remarks
Document pick-up	face-down automatic discharge; 1st page at bottom	
Reading	by fixed scanner; feeding by document tractor	
Light source	halogen lamp (80V 220W, 100V; 175V 250W, 200V)	
Document type	1P computer form* (50 to 80 g/m ²)	
Document size	8 to 15 in. (203.2 to 381.0 mm) wide; 7 to 12 in. (203.2 to 304.8 mm) long	
Copy paper size	A4, A4R, LTR, LTR-R	
Copy count	1 set (no multiple sets)	
Copy counter	copier's display (service mode)	
Pick-up tray capacity	50 mm max. (equivalent of 500 80 g/m ² paper)	on multifeder cover
Document delivery tray capacity	50 mm max. (equivalent of 500 80 g/m ² paper)	
Document size identification	automatic at tractor (width); by input of number of holes per page (length)	
Auto paper selection**	available (A4 or A4R in metric; LTR or LTR-R in inch)	
Auto reproduction ratio selection**	Available (automatic between 64% and 100% based on document and copy paper sizes; may be varied manually in 1% increments)	64% to 100% in manual
AE	Available (single paper only)	
Power supply	24V DC (from copier); AC (from copier for scanning lamp)	
Dimensions	722(W) x 595(D) x 375(H) mm; 28.4(W) x 23.4(D) x 14.8(H) in.	
Weight	13.4 kg (29.5 lb.); excluding kit	
Operating conditions	same as copier	

* See below.

1P Computer Form
non-copy form (not carbon-backed)
2P/3P Computer form

** See below.

Specifications subject to change without notice.

■ Auto Paper Selection

The width of the computer form is identified based on the position of the tractor, and the length of the form is specified by the number of holes per page of the form; both measurements are used to identify the size of the document and to select the copy paper.

document width/length > 1, A4 (LTR)

document width/length < 1, A4R (LTR-R)

■ Auto Reproduction Ratio Selection

Document width	Document length (holes)	Auto copy paper selection	Auto repro ratio selection
15 in.	11 in. (22)	A4 (LTR)	69% (71%)
14-7/8 in.	8-1/2 in. (17)	A4 (LTR)	79% (74%)
9 in.	11 in. (22)	A4R (LTR-R)	96% (94%)

■ Document Feeding

When copy operation starts, the first six pages are fed with relatively larger intervals so that the user may be able to crease the page ends. Subsequent pages are fed at shorter intervals up to the last page.

■ Delivered Copies

If more than 250 pages are copied, copying operation stops at each set of 250 sheets; a message is indicated so that the user is advised to remove the copies from the copier's tray or the sorter's bins. A press on the COPY START key causes the machines to resume operation.

Specifications subject to change without notice.

III. NAMES OF PARTS

A. External View

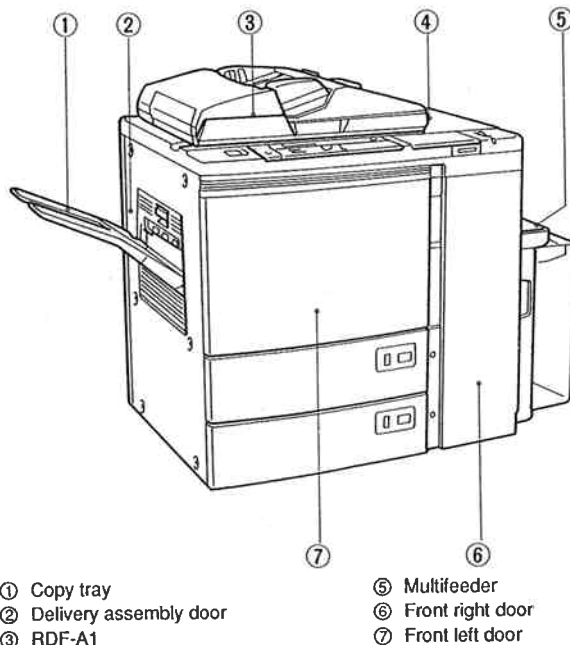
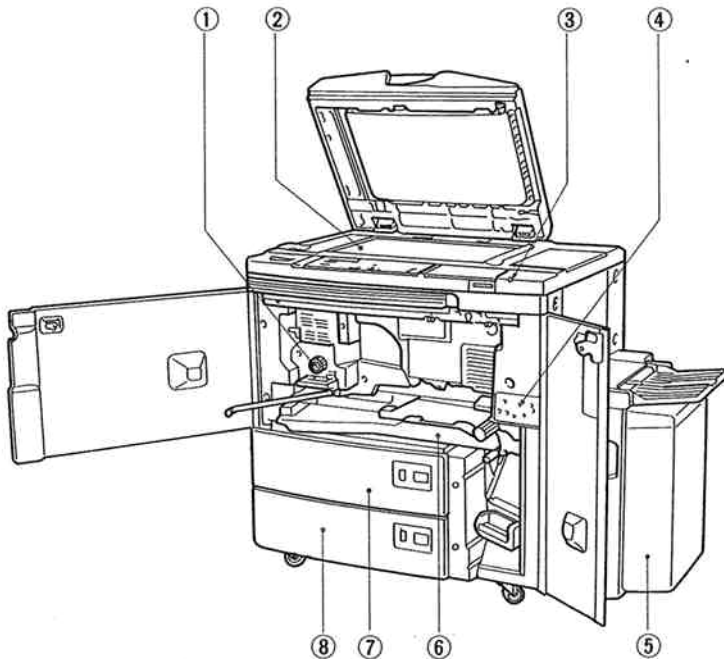


Figure 1-1



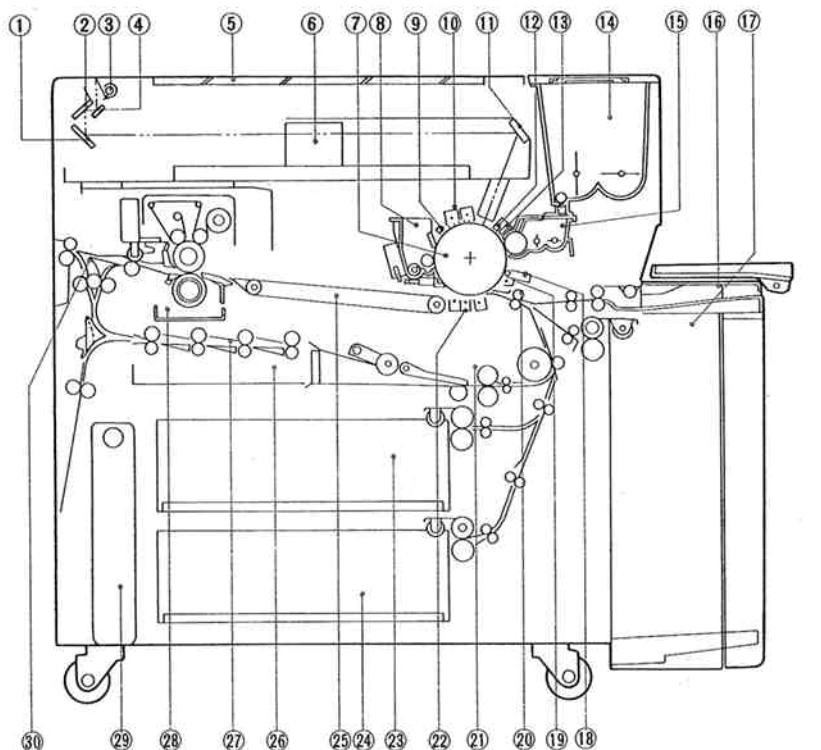
- ① Fixing assembly knob
- ② Copyboard glass
- ③ Power switch
- ④ JAM indicator

- ⑤ Side tray
- ⑥ Duplexing unit (holding tray)
- ⑦ Upper front tray
- ⑧ Lower front tray

Figure 1-2

B. Cross Section

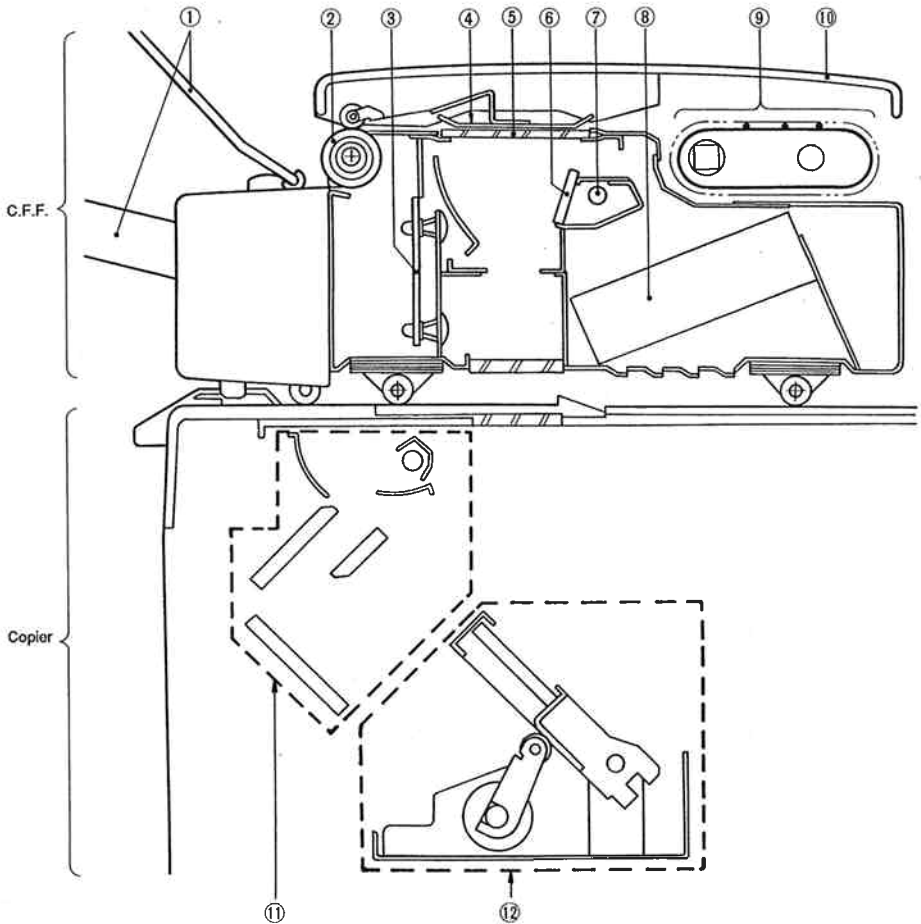
1. Cross Section of the Copier



- | | |
|---------------------------|---------------------------------------|
| ① No. 3 mirror | ⑮ Multifeder |
| ② No. 2 mirror | ⑯ Side tray |
| ③ Scanning lamp | ⑰ Roller electrode |
| ④ No. 1 mirror | ⑱ Pre-transfer corona assembly |
| ⑤ Copyboard glass | ⑲ Registration roller |
| ⑥ Zoom lens | ⑳ Re-feeder assembly |
| ⑦ Photosensitive drum | ㉑ Transfer/Separation corona assembly |
| ⑧ Drum cleaning assembly | ㉒ Upper front tray |
| ⑨ Pre-exposure lamp | ㉓ Lower front tray |
| ⑩ Primary corona assembly | ㉔ Feeder assembly |
| ⑪ No. 4 mirror | ㉕ Holding tray |
| ⑫ Blank exposure lamp | ㉖ No. 2 feeder assembly |
| ⑬ Potential sensor | ㉗ Fixing assembly |
| ⑭ Hopper assembly | ㉘ Waste toner receptacle |
| ⑮ Developing assembly | ㉙ Delivery assembly |

Figure 1-3

2. Cross Section of the C.F.F



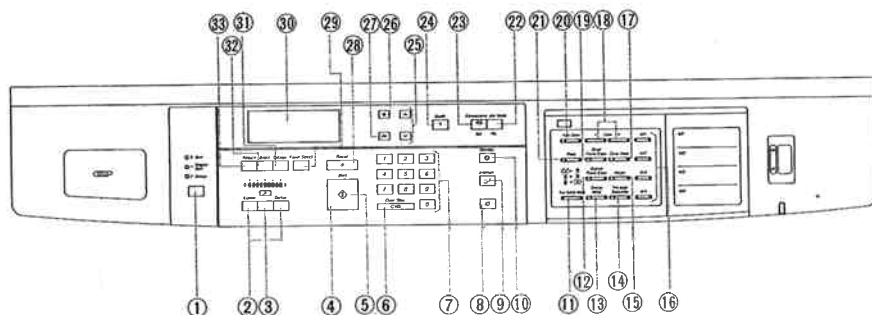
- ① Document tray
- ② Delivery roller
- ③ C.F.F. controller PCB
- ④ White plate
- ⑤ Platen glass
- ⑥ Dust-proofing glass

- ⑦ C.F.F. lamp
- ⑧ Heat exhaust fan
- ⑨ Tractor
- ⑩ C.F.F. cover
- ⑪ No. 1 and No. 2/3 mirror mount (machine)
- ⑫ C.F.F. mirror unit

Figure 1-4

IV. OPERATION

A. Control Panel



- | | |
|-----------------------------|-------------------------|
| ① SORT/GROUP/STAPLE key | ⑩ ZOOM key |
| ② COPY DENSITY key | ⑪ SHEET FRAME ERASE key |
| ③ AE key | ⑫ AUTO REPRO key |
| ④ COPY START key | ⑬ PHOTO key |
| ⑤ WAIT indicator | ⑭ AUTO START key |
| · green during wait/standby | ⑮ AUTO START ON/OFF key |
| · orange if auto start | ⑯ GUIDE key |
| ⑥ CLEAR/STOP key | ⑰ SHIFT key |
| ⑦ Keypad | ⑱ ASTERISK key |
| ⑧ ID key | ⑲ OK key |
| ⑨ INTERRUPT key | ⑳ RESET key |
| ⑩ PRE-HEAT key | Standard Mode |
| · ON: pre-heat mode | · copy count 1 |
| · flashes: auto shut-off | · DIRECT |
| ⑪ TWO-SIDED key | · side tray |
| ⑫ DOCUMENT FRAME ERASE key | ㉑ TRAY SELECT key |
| ⑬ OVERLAY key | ㉒ Message display |
| ⑭ PAGE SEPARATE key | ㉓ ENLARGE key |
| ⑮ BIND key | ㉔ DIRECT key |
| ⑯ COPY MODE MEMO key | ㉕ REDUCE key |
| ⑰ COVER MODE key | |

Figure 1-5

B. Making Copies

1) Switch the machine ON.

- ① The WAIT indicator will start to glow green.
- ② Normally, the wait time is 6 minutes (at 20°C).

Note:

The COPY START button may be pressed at this time; see p. 1-16.

2) Set documents on the document tray of the RDF-A1.

Or, open the RDF-A1, and place a document face down along the size index.

3) Select the desired reproduction ratio.

- ① **REDUCE, DIRECT, ENLARGE** Keys
Use them to copy a standard size document on standard size copy paper for a different reproduction ratio.
- ② **ZOOM** Key
Use it to vary the reproduction ratio between 50% and 200% in 1% increment.

■ If desired,

4) Press the TRAY SELECT key to select the copy paper size.

- ① Use the multifeeders if necessary.

5) Set the copy density.

- ① To copy in the AE (automatic exposure) mode, press the AE key and then check that the 'A' indicator has gone ON.
- ② For darker copies, press the COPY DENSITY *darker* key to move the index to the right; for lighter copies, on the other hand, press the COPY DENSITY *lighter* key to move the index to the left.

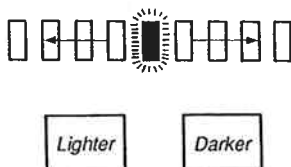


Figure 1-6

Note:

Adjust the density in the manual mode whenever transparent materials such as OHP film is used.

6) Set the copy count (1 to 999) using the numeric keypad, and check the copy count display.

- ① If the display does not show the count or to correct a mistake, press the CLEAR/STOP key and then set the count once again.

7) Press the COPY START key.

- ① If documents are set on the document tray of the RDF-A1, the pages will be picked up automatically and copying operation will start.
- ② Copies will be made in specified numbers.
- ③ The following operations are effective between the start and the end of each copying operation.

• Stopping the Operation

To stop copying operation in the continuous mode, press the CLEAR/STOP key or the RESET key; the machine stops operation after finishing the ongoing copy run.

• Changing from AE Mode to Manual Density Adjustment

A switchover from the AE mode to the manual density adjustment mode may be made while in the continuous copy mode. If the copies are too dark or too light in the AE mode, press the COPY DENSITY key while checking on the copies being made. It is not possible, however, to switch from the manual density adjustment mode to the AE mode.

Note:

All keys except the CLEAR/STOP, RESET, INTERRUPT, and COPY DENSITY keys are disabled during continuous copying operation.

- ④ When the selected tray runs out of paper during the continuous copy mode, the 'ADD PAPER' message is indicated on the control panel display. Add paper to the tray, and press the COPY START key; the remaining copies will be made automatically. This, however, may not be the case if the auto tray change function is ON (asterisk mode); see p. 1-23.
- ⑤ The JAM message will be indicated on the message display and the copying operation will stop in response to a jam; the copy count will indicate the remaining number of copies when the jam is removed.

- ⑥ The machine will return to the standard mode (auto clear) after each copying operation or key operation.

Note:

The auto clear time may be varied in the asterisk mode (user mode); see p. 1-23.

C. Auto Start

The COPY START key may be pressed while the machine is in the wait state; i.e., during the wait period after power-on, during the wait period after deactivation of the pre-heat mode, or during wire cleaning.

During the wait mode, set documents, select the desired copy mode, and then press the COPY START key.

The START lamp changes from green to orange to indicate that the auto start function has been activated; note that this automatically disables the interrupt mode.

The machine will start operation using the specified copy mode as soon as it enters the standby mode.

The auto start function may be deactivated by pressing the CLEAR/STOP key or the RESET key.

D. Using Computer Form (continuous form; effective only for Computer Form Feeder A1)

Using the Computer Form Feeder-A1 (C.F.F.), documents prepared on continuous forms may be copied continuously.

Note:

The C.F.F. cannot be used with the multifeder.

1. Setting the Documents

- 1) Lift the RDF-A1 and the Sub Feeder-A1, if attached; and set the C.F.F. on the machine.

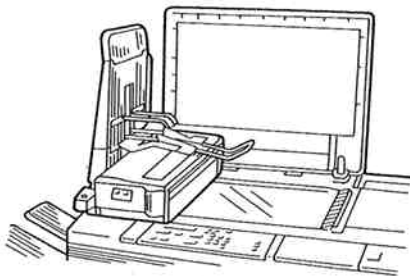


Figure 1-7

- 2) Flip over the sub tray of the multifeder.

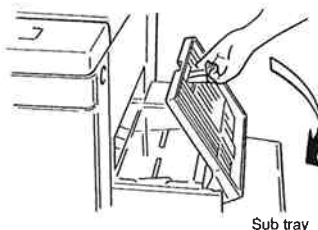


Figure 1-8

- 3) Set the first page of the form face up while butting it against the rear of the multifeder.

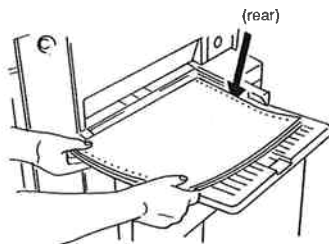


Figure 1-9

Note:

The stack on the multifeder may be as high as 50 mm (2.0 in, approx.).

- 4) Set the document tray and the sub tray of the C.F.F., and fit the tray support into the machine.

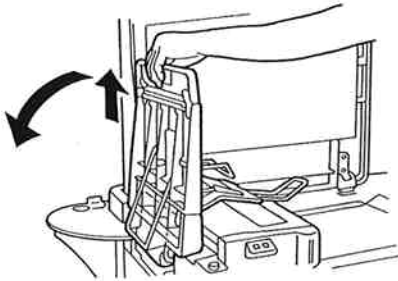


Figure 1-10

- 5) Open the C.F.F. cover.

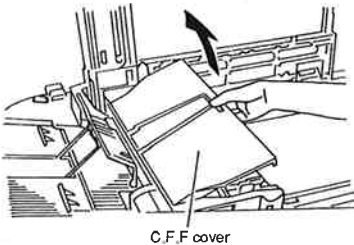


Figure 1-11

- 6) Shift the tractor lock lever (front) to the right to unlock it.

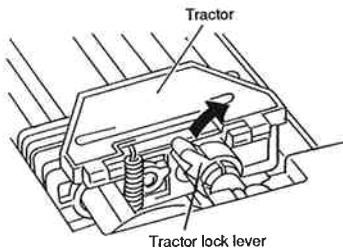


Figure 1-12

- 7) Open both front and rear tractor covers, and move the front tractor to suit the width of the form.

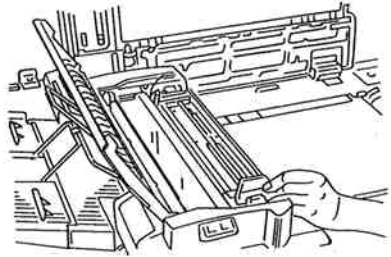


Figure 1-13

- 8) Set the form face down while matching its holes with the tractor bosses.

Note:

Make sure that the form is not too taut or too slack.

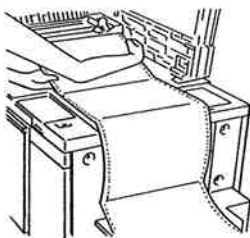


Figure 1-14

- 9) Close both tractor covers firmly; fix the form in place, and lock the tractor by shifting the tractor lock lever (front) to the left.

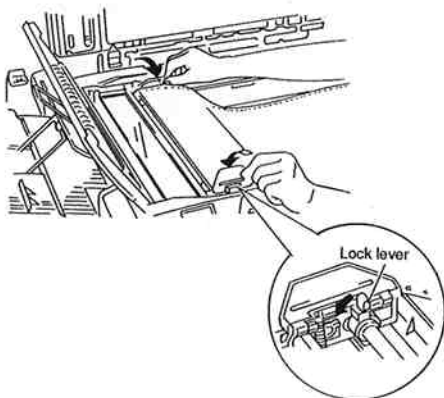


Figure 1-15

- 10) Turn the green dial to match the leading edge of the form with the index.

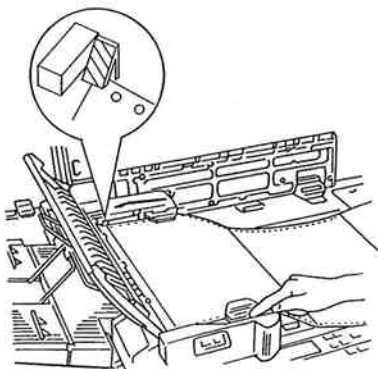


Figure 1-16

- 11) Close the C.F.F. cover, and set the sub guide.

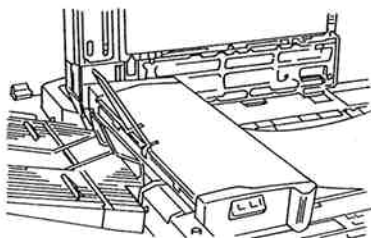


Figure 1-17

2. Setting the Copy Mode

- 1) Select the number of holes in the form (one page, one side only) or the length (inch) in the feeding direction using the up and down keys on the copier's control panel.

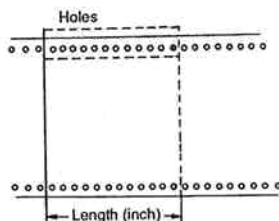


Figure 1-18

- 2) Press the OK key.
 - The copier automatically identifies the optimum size of copy paper (A4 or A4R) and the reproduction ratio* and indicates them on the message display.
 - * Between 64% and 100%.

Note:

To correct an incorrect setting (holes/length), turn the green dial clockwise to move the leading edge of the form away from the index; then, set the form, and enter the value once again.

- 3) Set the copy mode, and press the COPY START key; the form will be fed and copied automatically.

Note:

- The copy count must be '1'.
- Do not move the C.F.F. once copying operation has started.

Note:

The following settings may be made:

- Density
- Binding (selection of right/left is not available)
- Two-sided

- 4) Make a crease while first to sixth copies are being made; i.e., the copying speed is relatively slow during this time. Respect the original creases of the form.

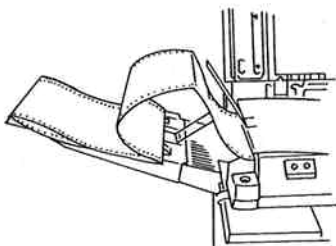


Figure 1-19

3. After Making Copies

- 1) Remove the form from the document tray, shift down the sub guide, and slide in the document delivery tray.
- 2) Press the C.F.F. release button to return the C.F.F. to its original position; then, close the RDF-A1 and the Sub Feeder, if attached.

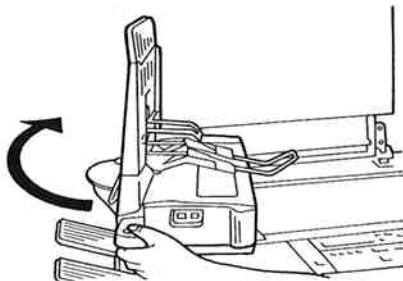


Figure 1-20

Note:

Make sure that the tray has been slid inside before returning the C.F.F. to its original position; otherwise, the copier may not operate.

E. Pre-Heat Mode and Auto Shutoff Function

1. Using the Pre-Heat Mode

When the pre-heat mode key is pressed during standby, the pre-heat mode will be activated; this will cause all indicators except the POWER and PREHEAT indicators to go OFF.

- ① All other keys except the PREHEAT key will be disabled during the pre-heat mode.
- ② In the pre-heat mode, the temperature of the fixing assembly is controlled to 5°C lower than normal.
- ③ The pre-heat mode may be deactivated by pressing the PREHEAT key once again.

2. Auto Shutoff Function

The machine will be shut off automatically if no operation is executed over a specific period of time.

In the auto shutoff mode, the PREHEAT indicator on the control panel flashes; the POWER indicator remains lit, and all other indicators remain OFF.

- ① The machine will shut itself off if no operation is executed for two hours since most recent operation; the time may be varied in the service mode.
- ② While the machine is in this state, no other key except the PREHEAT key is enabled.
- ③ The fixing assembly goes OFF as soon as the machine shuts itself off.
- ④ The auto shut off function may be disabled by pressing the flashing PREHEAT key or switching the POWER switch OFF and then ON. The machine will remain in the wait state until the temperature of the fixing assembly reaches a specific value. During this time, the auto start may be selected; see p. 1-16.

F. Binding

A binding margin may be created on the left or right side of the copies using the BIND key.

Note:

In this mode, the image on the document is shifted to the right or to the left to create a binding margin on the right or left side of the copy.

- ① The margin may be 1 to 20 mm in width, variable in 1-mm increment.
- ② The side, i.e., right or left, may be selected in the asterisk (user) mode.

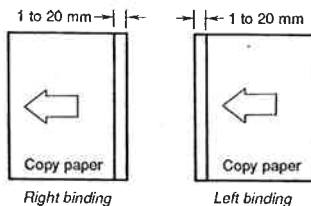


Figure 1-21

G. Document Frame Erasing

Press the DOCUMENT FRAME ERASE key to blank (white) out lengths of space on the document. In this mode, documents will be treated as if they had white space on four sides about 2 mm in width.

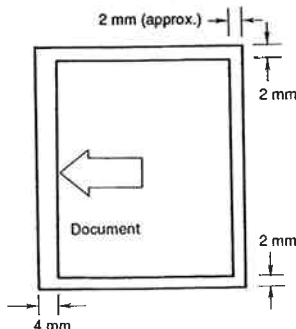


Figure 1-22

H. Sheet Frame Erasing

Press the SHEET FRAME ERASE key to blank (white) out lengths of space on the copy.

In this mode, copies will have white space on four sides about 7 mm in width.

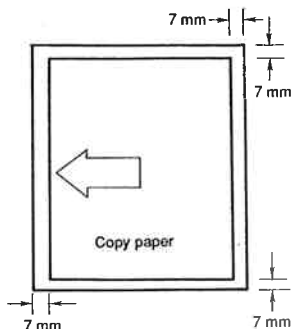


Figure 1-23

I. Two-Sided Copying

Two-sided copies may be either of the following:

- from one-sided documents to two-sided copies
Two one-sided documents are copied onto both sides of one sheet of copy paper; a press on the PAGE SEPARATE key at the time produces page separation two-sided copies.
- from two-sided document to two-sided copy
One two-sided document is copied onto both sides of one sheet of copy paper.
- from two-sided document to one-sided copies
One two-sided document is copied onto one side of two sheets of copy paper.

J. Overlay Copying

Press the OVERLAY COPY key to make overlay copies. A press on the PAGE SEPARATE key at the same time produces page separation overlay copies.

K. Auto Paper Selection (w/ RDF-A1 only)

This function is available only when an RDF-A1 is used. In this mode, the tray containing paper of the size most suited to the document size and the reproduction ratio will be selected for copying.

If no such paper is found, the cassette with paper that can accommodate the most area of the document image will be selected, and the selection will be indicated on the message display. A press on the COPY START key starts the copying operation; to stop the operation, press the CLEAR/STOP key.

L. Auto Reproduction Ratio Selection (w/ RDF-A1 only)

This function is available only when an RDF-A1 is used. In this mode, the machine automatically selects the reproduction ratio most suited to the document size and the paper (cassette) size for copying.

The RDF-A1 identifies the size of documents by converting it to one of the standard sizes; as such, all ratios selected in this mode are one of the standard ratios.

Note:

The auto reproduction ratio selection mechanism cannot be used simultaneously with the auto paper selection mechanism.

M. Interrupt Copying

Operate as follows to make a single copy of a different document while making copies in large numbers.

- 1) Press the INTERRUPT key to set the interrupt mode.

Restrictions

- ① Does not allow making more than one copy.
 - ② Does not allow auto paper selection.
 - ③ Does not allow the use of the RDF-A1.
 - ④ Does not allow the use of the C.F.F.
 - ⑤ Does not allow the continuous mode.
- 2) Press the INTERRUPT key to clear the mode.

N. Consecutive Mode

If a sub feeder is attached, the consecutive mode enables copying of documents set on both the RDF-A1 and the sub feeder automatically without interruption.

- 1) Press the CONSECUTIVE JOB MODE SET key to set the copy mode; the CONSECUTIVE MODE lamp will start to flash.
- 2) Press the CONSECUTIVE JOB MODE FIX key to store the mode; the CONSECUTIVE MODE lamp remains lit.
 - ① Press the CONSECUTIVE JOB MODE SET key to deactivate the consecutive mode.

O. Cover Mode

When using an RDF-A1, this mode enables addition of three different covers to copies.

- Front cover: adds a front cover page.
- Back cover: adds a back cover.
- Inside cover: adds an inside cover.

Further, the image on the document may be copied on the front cover, back cover, or inside cover and arranged depending on how modes are combined.

When combined with the 'one-sided to two-sided' or 'two-sided to one-sided' mode, some modes allow selection of face or back.

- ① The tray from which inside covers are picked may be specified in the asterisk (user) mode; if not specified, the pick-up will be from the multifeeper.

Front and back covers are picked up from the multifeeper; be sure to set them in the multifeeper.

- ② Inside covers may be 20 sheets or less.
- ③ In the two-sided copy mode, the inside covers must be odd-number pages.

P. ID Mode

The ID mode is used to prohibit copying operation unless a 4-digit ID No. is entered. As many as 25 ID Nos. may be stored, and a total copy count may be indicated under each ID No. for volume control.

1. Storing an ID

- 1) Press *, ID, AUTO REPRO, and then *.
- 2) Select 'ID STORE' using the up and down keys, and press the OK key.
- 3) Enter a 4-digit ID No. using the numeric keypad.
- 4) Press the OK key to continue; or, press the ID key to bring up the ID No. input screen.

2. Entering the ID No.

- 1) Enter any of the stored ID Nos. on the ID No. input screen using the numeric keypad. To correct a mistake, press the CLEAR/STOP key, and re-enter the No.
- 2) Press the OK key.
- 3) Check that the machine is ready for copying; the machine will be ready if the ID No. input matches any of the stored ID Nos.
- 4) Press the ID key, if necessary, to bring up the ID input screen.

3. Copy Volume Control

To indicate the total number of copies made under each ID No., operate as follows:

- 1) Press *, ID, AUTO REPRO, and then *.
- 2) Select 'COUNT CONTROL' on the message display using the up and down key, and press the OK key.
- 3) Select 'COUNT CHECK BY GROUP', and press the OK key.
- 4) Press the down key to scan through the total counts for the ID Nos.

4. Clearing (Resetting) All Counts

- 1) Press *, ID, AUTO REPRO, and then *.
- 2) Select 'COUNT CONTROL' on the message display using the up and down keys, and press the OK key.
- 3) Select 'COUNT ALL CLEAR', and press the OK key to clear all counts.

Note:

The counts cannot be cleared individually.

Q. Asterisk Mode (user mode)

1. Types of Asterisk Modes

The machine's asterisk mode enables the user to set modes of his/her own choice.

The asterisk mode consists of the following functions:

Item	Mode
1	Mode Memory
2	Zoom Program
3	Left/Right Margin
4	Transparency Interleaving
5	Different Size Originals
6	Auto Original Counting
7	Continuous Run
8	Insert Sheet Feed Select
9	Wire Cleaning
10	Auto Clear Time
11	Date/Time Set
12	Skip Mode

2. Activating the Asterisk Mode

- 1) Press the asterisk key (*).
- 2) Select the item using the up and down keys; the item No. may be entered using the numeric keypad.
- 3) Press the OK key to enter the item.

a. Storing the Copy Mode Memory

As many as four copy modes may be stored; at the same time, the settings under the following asterisk modes may be stored.

- binding, selection of
 - document size mixing, specification of
 - document auto count, selection of
 - OHP w/ insert, specification of
 - inside cover tray, selection of
- 1) Enter the settings.
 - 2) Enter the asterisk mode, and select 'MODE MEMORY STORE'.
 - 3) Press the COPY MODE MEMO KEY (M1, M2, M3, or M4).
 - 4) Press the OK key.
 - ① The above operations store the copy mode settings; a press on the MEMO key will bring up these settings.
 - ② The contents of the memory will remain intact even when the machine is switched OFF.
 - ③ New settings, if entered, will overwrite the current settings.

b. Zoom Program

When the document size and the desired copy size are entered, the machine automatically computes and sets the correct reproduction ratio.

- 1) Enter the asterisk mode, and select '2: zoom program'.
- 2) Enter the document size (mm) using the numeric keypad.
- 3) Select 'copy' using the up and down keys.
- 4) Enter the desired copy size using the numeric keypad.
- 5) Press the OK key to return to the standard screen.

Reproduction ratios are automatically set based on the following formula:

$$\text{desired copy size} \div \text{document size} \times 100\%$$

Note:

If the result is 50% or less, 50% will be selected; if over 200%, 200% will be selected.

c. Left Binding/Right Binding

In this mode, selecting left binding or right binding enables the following:

- specification of the position of the binding margin in the binding mode.
- specification of priority (left/right page) in the two-page separation mode.

Table 1-1 shows the position of the binding margin and the priority (left/right page) in the two-page separation mode when 'right binding' is selected.

	Binding	Two-page separation
Left binding	Left	Right page first
Right binding	Right	Left page first

The above represents when copies are made with the top of the document placed at the rear (away from the control panel).

Table 1-1

- 1) Enter the asterisk mode, and select '3: left bind/ right bind'.
- 2) Select 'left bind' or 'right bind' using the up and down keys.
- 3) Press the OK key to enter the setting and to return to the standard screen.

d. OHP with Insert

When setting documents in the RDF-A1 and using OHP sheets in the continuous mode, covers (plain paper) may be put between OHP copy pages. The inside covers, further, may carry an image from a document page.

- 1) Enter the asterisk mode, and select '4: OHP w/ insert'.
- 2) Select 'OHP w/ insert ON' using the up and down keys.
- 3) Select the pick-up tray for the inside covers using the up and down keys, and then press the OK key.

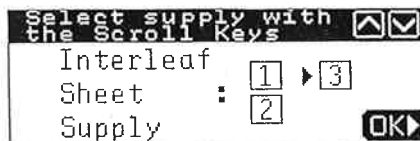


Figure 1-24

- The display shown in Figure 1-24 represents the following:
 - 1: upper front tray
 - 2: lower front tray
 - 3: side tray
- 4) Press the 'manual copy ON' using the up and down keys if a document page image is to be on the inside cover.
 - The OHP inside cover mode will be stored.

Note:

The copy count must be '1'.

e. Mixed Document Sizes

This mode is used when setting documents of different sizes in the RDF-A1; copy paper sizes and reproduction ratios will be selected to suit the size of each document.

In this mode, the machine identifies the size of each document; therefore, its copying speed may slow down.

Note:

- i. The mixed document size mode key on the RDF-A1 may be used to select the mode.
- ii. The documents must be of the same feed-in width; e.g., A4 and A3.

- 1) Enter the asterisk mode, and select '5: mixed document size'.
- 2) Select 'ON' using the up and down keys to specify the mixed document size mode.
- 3) Press the OK key to store the setting and return to the standard screen.

f. Document Auto Count

The documents are counted only when the RDF is used.

With this function, the documents set in the RDF-A1 are counted in response to a press on the COPY START key when making two-sided copies from one-sided documents or making overlay copies; if an odd number of documents are set, the last page will be a one-sided copy. To disable the function, operate as follows:

- 1) Enter the asterisk mode, and select '6: document auto count'.
- 2) Select 'OFF' using the up and down keys if to disable the document count function.
- 3) Press the OK key to store the setting and return to the standard screen.

Note:

If two-sided copying is executed without counting the documents, the first page of an odd number of documents will be copied onto the back of copy paper.

For this reason, to copy the first page of the document on the face of the copy paper, a blank page must be placed at the end of the document stack; this is not necessary if the document consists of an even number of pages.

g. Auto Tray Change

With this function, if the selected tray runs out of copy paper, another tray which holds paper of the same size will be selected automatically to continue copying operation. To disable the function, operate as follows:

- 1) Enter the asterisk mode, and select '7: auto tray change'.
- 2) Select 'OFF' using the up and down keys if to disable the auto tray change function.
- 3) Press the OK key to store the setting and to return to the standard screen.

h. Selecting the Inside Cover Tray

With this mode, a tray will be selected for inside covers in response to the COVER key and selection of the inside cover mode; otherwise, all inside covers will be picked up from the multifeder.

- 1) Enter the asterisk mode, and select '8: inside cover tray'.

- 2) Move the cursor to the desired tray using the up and down keys.

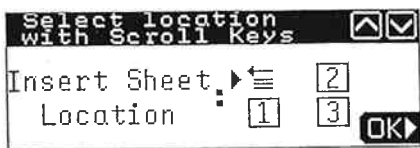


Figure 1-25

The display shown in Figure 1-25 represents the following:

- ☐ : multifeeder
- ☐ 1 : upper front tray
- ☐ 2 : lower front tray
- ☐ 3 : side tray

- 3) Press the OK key to store the setting and to return to the standard screen.

i. Wire Cleaning

With this function, the primary, pre-transfer, transfer, and separation corona wires may be cleaned automatically.

- 1) Enter the asterisk mode, and select '9: wire cleaning'.
- 2) Press the OK key to clean each corona wire.

Note:

All corona wires are cleaned at the same time; individual cleaning is not available.

Cleaning is executed for about 60 seconds; upon completion, the mode is cleared automatically.

j. Auto Clear Time

The auto clear time may be varied between 1 minute and 9 minutes in 1-minute increment.

If set to '0', the function will be disabled.

- 1) Enter the asterisk mode, and select '10: auto clear time'.
- 2) Enter the desired auto clear time using the numeric keypad.
- 3) Press the OK key to store the setting.

k. Date and Time

With this function, the date/time notations shown on the message display may be varied.

- 1) Enter the asterisk mode, and select '11: date/time'.
- 2) Enter settings for flashing items on the display using the numeric keypad; then, press the OK key.

l. Skip Mode

You can deactivate skip mode, which is used when making a two-sided copy of one-sided documents with the RF-A1 in use.

Note, however, that choosing '1' for 'SKIP' in service mode (*5*) will fix the setting to 'OFF', not enabling the selection of 'ON/OFF'.

- 1) Enter user mode, and select '12: skip mode'.
- 2) Press the ☐ OK key to select 'OFF', and press the ☐ OK key. This will deactivate skip mode.

If you leave user mode by pressing the RESET key, 'ON' will automatically be selected for skip mode.

V. WARNINGS AND CORRECTIONS

A. JAM Message

If the JAM message is shown on the control panel, go through the following steps to correct the problem.

For jams in the options (sorter, RDF-A1), see the respective SERVICE MANUAL.

If the jam is in the machine, check the pick-up, separation/feeder, fixing, delivery, and cleaning assemblies and the duplexing unit; be sure to remove all paper. A location indicator is found inside the machine (Figure 1-26); the indicator will come into view when the front door is opened.

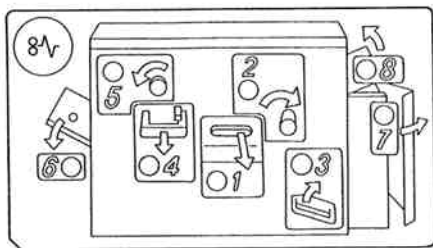


Figure 1-26

1. 1 or 2 is ON

- 1) Turn the knob in the direction of the arrow to move the paper forward.

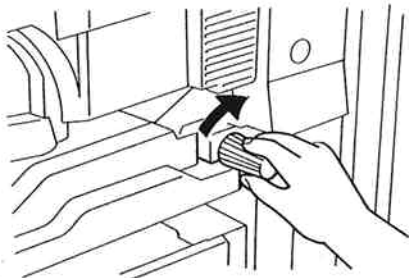


Figure 1-27

- 2) Hold the holding tray release lever, and slide out the holding tray toward the front.

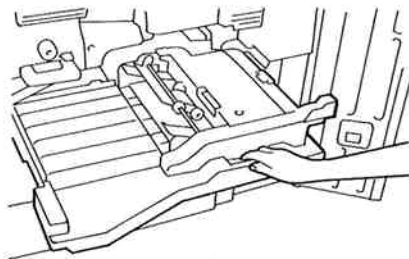


Figure 1-28

- 3) Open the cover of the holding tray, and remove the jam.

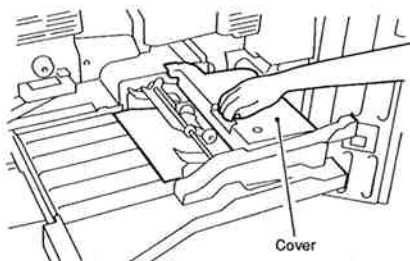


Figure 1-29

- 4) Make sure all paper has been removed; then, slide the holding tray back into position.

2. If 3 is ON

- 1) Turn the lever ① into the direction of the arrow, and remove the jam.

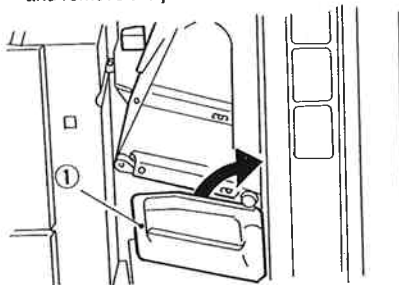


Figure 1-30

- 2) Turn the lever ② into the direction of the arrow, and remove the jam.

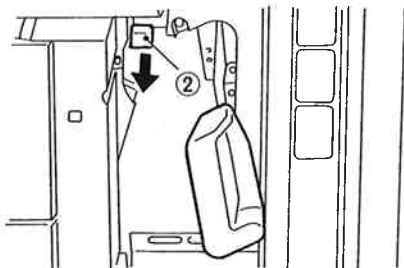


図 1-31

- 3) Make sure that all paper has been removed; then, shift both levers back into their original positions.

3. If 4 Is ON

- 1) Push down on the fixing assembly release lever to disengage the lock; then, hold the grip, and slide out the fixing assembly to the front.

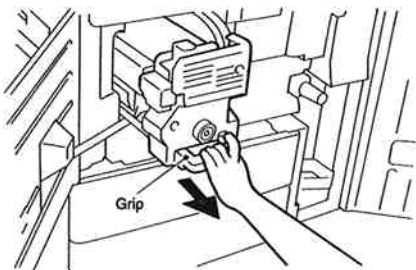


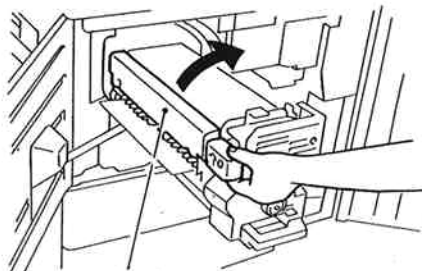
Figure 1-32

Note:

If the copy paper is trapped over the fixing assembly and the delivery assembly, open the delivery assembly. The fixing assembly cannot be slid out; this consideration is made to prevent tearing paper.

For details, see "If 5 or 6 is ON."

- 2) Lift the separation claw assembly if the jam is lodged on the separation claw. To lift the assembly, press the separation claw release switch to release the claw assembly, and rotate it until it becomes locked. Remove the jam in this condition.



Separation claw assembly

Figure 1-33

- 3) Make sure that all paper has been removed; then, lower the separation claw assembly while holding down the separation claw release switch.

4. If 5 or 6 Is ON

- 1) Detach the copy tray, and open the delivery assembly.
- 2) Remove the jam. If its end is showing, pull it out with care; if it is stuck on the fixing roller, turn the fixing assembly knob in the direction of the arrow.

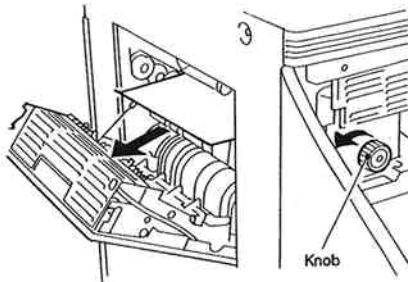


Figure 1-34

5. If 7 or 8 is ON

- 1) Open the side tray cover (multifeeder cover if the multifeeder is used), and remove the jam with care.

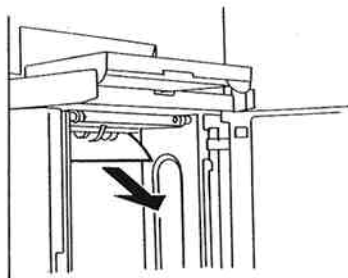


Figure 1-35-1

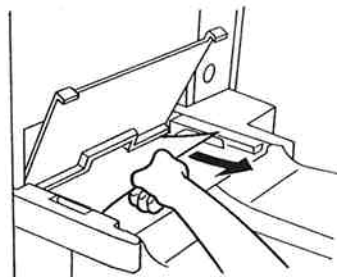


Figure 1-35-2

- 2) Shift the lever in the direction of the arrow to remove the jam.

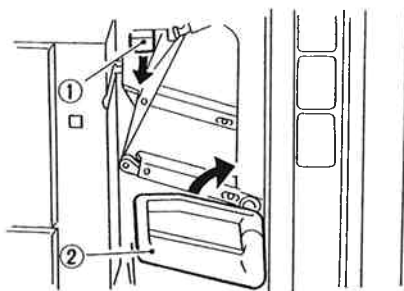


Figure 1-36

At the time, the lifter will not lower to its limit but stops when the top face of the paper has lowered a maximum of 12.5 mm.

6. Jams in C.F.F.

The JAM message will be indicated on the copier's message display in response to a jam in the C.F.F.

To correct the problem, operate as follows:

Note:

If the jam is in the copier, the C.F.F. will be reset automatically as soon as the jam is removed.

- 1) Open the sub guide and the C.F.F. cover.

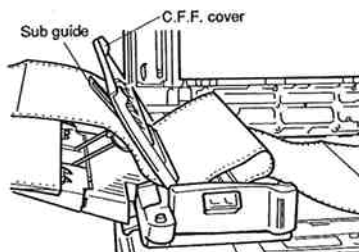


Figure 1-37

- 2) Open the tractor covers, and place the form once again.

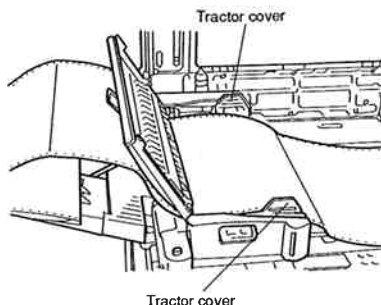


Figure 1-38

- 3) Close the tractor cover with care.
- 4) Check the form pages against the delivered copies; then, match the perforation along the leading edge of the desired page against the index; i.e., turn the green dial.

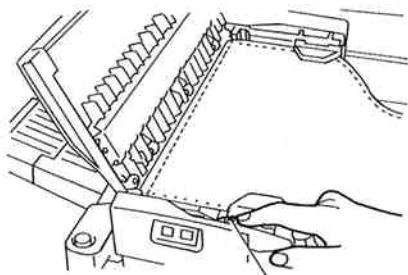


Figure 1-39

- 5) Close the C.F.F. cover, and set the sub guide; then, press the COPY START key.

8. Improperly Placed Form (C.F.F.)

Go through the following if the finished pages of the form fail to collect properly on the document tray.

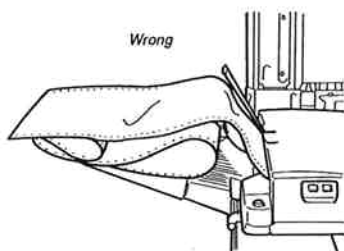


Figure 1-40

- 1) Press the CLEAR/STOP key to stop the copying operation.
- 2) Arrange the form on the document tray.
 - If the C.F.F. cover has been opened, match the leading edge of the next form page with the index.
- 3) Press the COPY START key.
 - Crease the form while the first to sixth copies are being made; i.e., the copying speed is relatively slow during this time.

9. Detaching the C.F.F. Cover

If the form jams or fails to collect properly on the document tray in the C.F.F., open the C.F.F. cover; if the problem cannot be corrected, go over the following (the form need not be separated):

- 1) Detaching the C.F.F. Cover
 - ① Open the C.F.F. cover.
 - ② Push the hinge lever found behind the front of the C.F.F. cover into the direction of the arrow (Figure 1-41), and detach the front hinge and then the rear hinge; then, detach the C.F.F. cover.
- 2) Attaching the C.F.F. Cover
 - ① Attach the hinge at the rear of the C.F.F. cover, and fit the front hinge while sliding the tab.



Figure 1-41

- ② Close the C.F.F. cover.

B. ADD PAPER Indicator

When the side tray, front tray, or multifeeders run out of paper, the ADD PAPER message is indicated on the message display.

Note:

The ADD PAPER message is also indicated under the following conditions:

- The front tray is not properly set to the copier.
- The side tray cover is not properly closed.

1. Adding Paper to the Side Tray

- 1) Open the side tray cover.
- 2) Keep the sheets of copy paper butted against the rear guide, and stack them on the lifter; then, close the cover. (The side tray holds about 4,000 sheets (A4) of 64 g/m².)

2. Adding Paper to the Front Tray

- 1) Push the OPEN button for the desired tray.

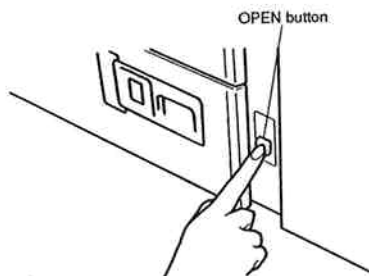


Figure 1-42

- 2) Hold the grip of the tray, and slide the tray until it stops.

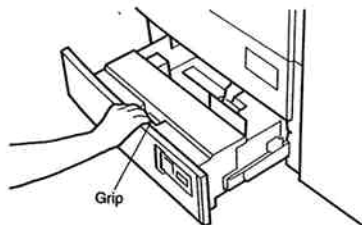


Figure 1-43

- 3) Place the sheets of copy paper butted against the right side of the tray, and close the tray.

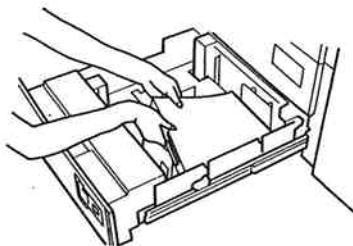


Figure 1-44

- 4) Advise the user not to place paper over the section of the front tray indicated in Figure 1-46.

Do not put paper on this side.

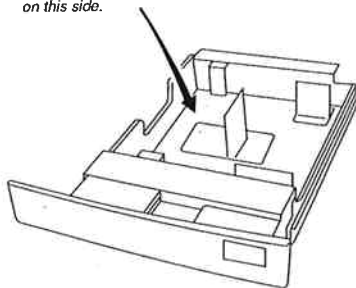


Figure 1-45

C. ADD TONER Message

The ADD TONER message is indicated when the hopper unit or the developing assembly starts to run out of toner.

1. Adding Toner

Shake the toner bottles if new.

- 1) Open the toner supply mouth cover, fit the boss of the toner bottle in the groove of the supply mouth, and push the bottle to the rear; set the bottle so that the 'Canon' logo is toward the rear.



Figure 1-46

- 2) Move the locking tab into the direction of the arrow to fix the toner bottle in place.

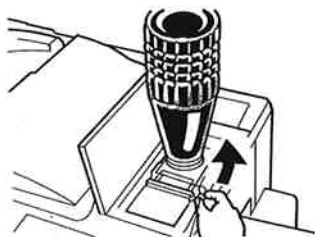


Figure 1-47

- 3) Pull the shutter toward the front; keep pulling it until the seal stop disengages and a click is heard.

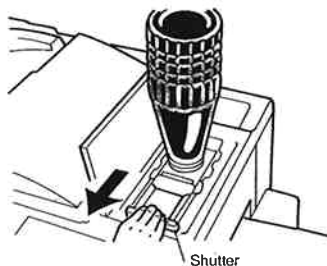


Figure 1-48

- 4) Pull out the seal stop to the front until the STOP mark comes into view.

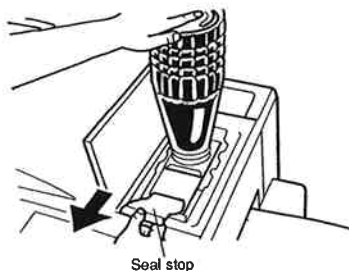


Figure 1-49

- Tap on the toner bottle lightly to make sure that all toner has fallen into the hopper unit.

- 5) Hold both sides of the shutter, and move it to the rear until it stops.

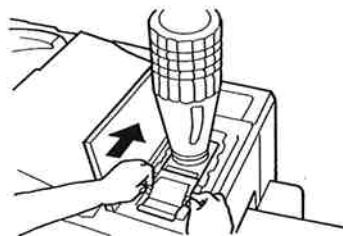


Figure 1-50

- 6) Pull the toner bottle to the front and then up to detach it.

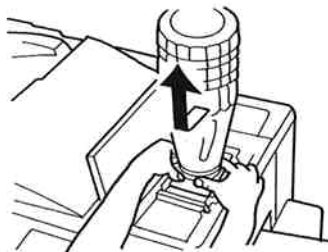


Figure 1-51

- 7) Close the toner supply mouth cover.

VI. ROUTINE WORK BY THE USER

Advise the user to clean the following at least once a week.

(1) Copyboard Glass

Wipe it using cloth moistened with water; then, dry wipe it.

(2) Copyboard Cover/RDF Feeder Belt

Wipe it using mild detergent solution; then, dry wipe it.

CHAPTER 2

COPYING PROCESS

I. IMAGE FORMATION	2-1	II. AUXILIARY PROCESSES	2-7
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1. IMAGE FORMATION

A. Outline

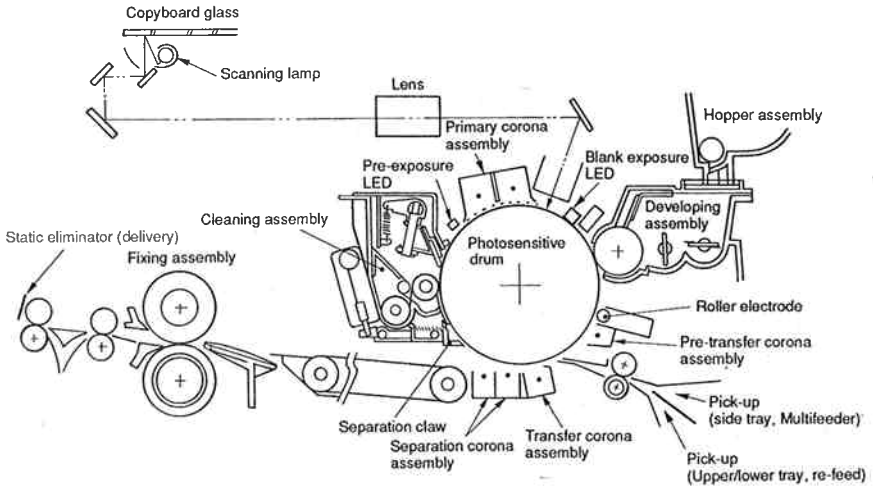


Figure 2-101

The NP6060 is an electrophotographic type, and its components are arranged as shown in Figure 2-101.

The copier's automatic control mechanism ensures optimum surface potential, enabling stable image reproduction.

What follows below are discussions of the steps used by the machine to produce copies; the automatic control mechanism is discussed separately.

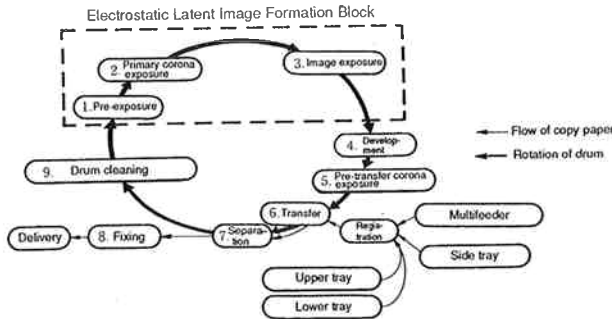


Figure 2-102

The following nine steps are involved in producing images:

- Step 1 Pre-exposure
- Step 2 Primary corona exposure (positive DC)
- Step 3 Image exposure
- Step 4 Development (AC + positive DC)
- Step 5 Pre-transfer corona exposure (AC + negative DC)
- Step 6 Transfer (positive DC)
- Step 7 Separation (AC + positive DC)
- Step 8 Fixing
- Step 9 Drum cleaning

The photosensitive drum consists of two layers: the outer layer is a photoconductive layer made of amorphous silicon and the inner layer, a conductive layer of aluminum.

In general, amorphous silicon is known to provide high durability, sensitivity, and resolution.

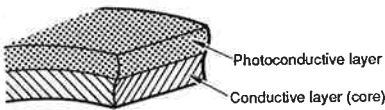


Figure 2-103

B. Electrostatic Latent Image Formation Block

The block consists of three steps through which the positive charges in the areas of the drum surface corresponding to the dark areas of the document are left as they are while those corresponding to the light areas of the document are rid of the positive charges, thereby forming an electrostatic image on the drum surface.

The potential of the *light* and *dark* areas is maintained by a surface potential control mechanism.

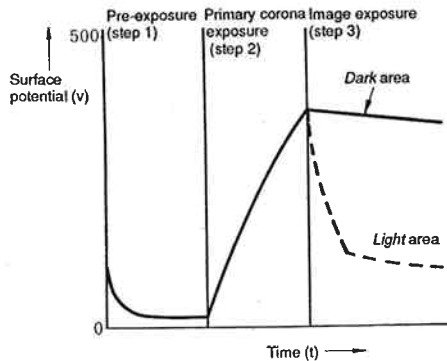


Figure 2-104

C. Step 1 Pre-Exposure

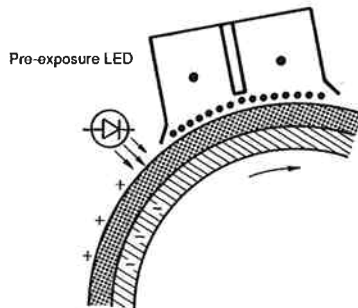


Figure 2-105

Pre-exposure eliminates the residual charges, on the drum to prepare for primary corona exposure, thereby ensuring even copy density.

D. Step 2 Primary Corona Exposure

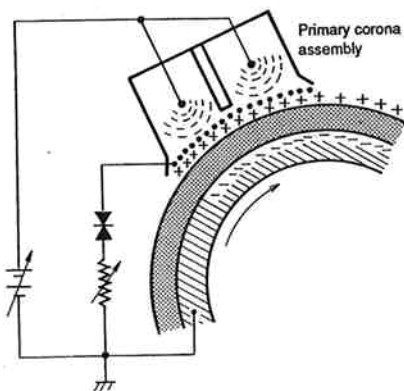


Figure 2-106

Primary corona exposure charges the drum surface to a uniform positive potential.

The surface potential of the drum is dependent on the potential of the grid; and, to ensure stable potential, the grid is grounded through a varistor.

E. Step 3 Image Exposure

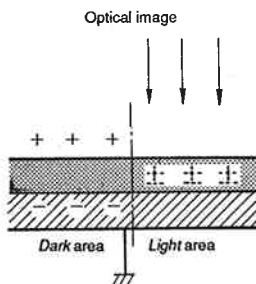


Figure 2-107

The optical image of the document is projected on the drum surface to neutralize the charges in the light areas.

F. Step 4 Development

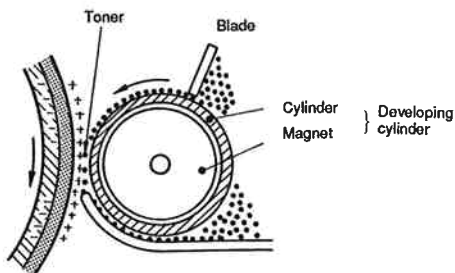


Figure 2-108

As shown in Figure 2-108, the developing assembly consists of a developing cylinder and a magnetic blade; the developing cylinder is made up of a fixed magnet and a cylinder which rotates around the magnet.

The toner (developer) used for the machine is a single-component type, consisting mainly of magnetite and resin. The toner has an insulating characteristic and is charged to a negative potential by friction against the rotating cylinder.

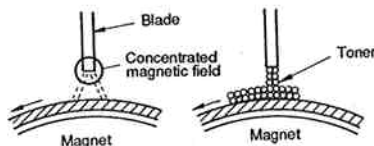


Figure 2-109

A concentrated magnetic field develops between the magnet and the tip of the blade, attracting the magnetized toner.

Once inside the magnetic field, the toner becomes virtually immobile because of the strong attraction to the blade.

The toner is then deposited on the cylinder in a thin, even layer.

An AC bias and a DC bias are simultaneously applied to the developing cylinder and the blade and, with the positive component being greater than the negative component at any given time, they provide a developing bias.

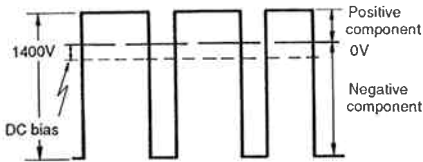


Figure 2-110

During copying operation, the toner is attracted to the photosensitive drum or repelled to the developing cylinder depending on the difference between the surface potential of the drum and the potential of the developing cylinder (developing bias) as well as the strength of the bond between the toner and the magnet, turning the electrostatic latent image into a visible image.

G. Step 5 Pre-Transfer Corona Exposure

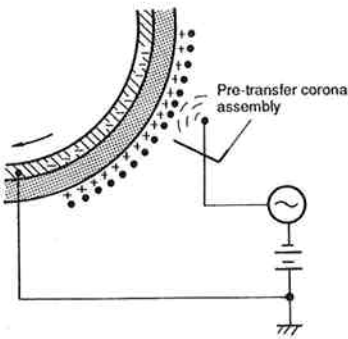


Figure 2-111

AC corona is applied, with a DC bias, to the toner on the drum surface to increase its charges.

The increase improves the transfer and facilitates separation of the copy paper.

Step 6 Transfer

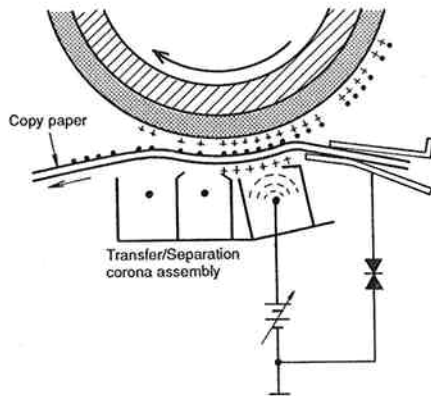


Figure 2-112

A positive corona charge is applied to the back of the copy paper, causing the toner on the drum to move to the copy paper.

The transfer guide is grounded through a varistor to prevent soiling of the back of the copy paper or poor transfer.

Note:

Direct grounding of the transfer guide would let the charges needed on the back of the copy paper to escape, leading to poor transfer; if not grounding, on the other hand, the transfer guide would be charged, attracting toner particles and, consequently soiling the back of the paper.

I. Step 7 Separation

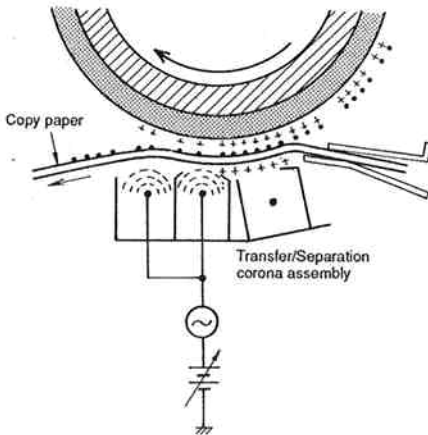


Figure 2-113

The copy paper is charged to a positive potential by the transfer corona and is statically attracted to the surface of the photosensitive drum. To separate the copy paper, the attraction between the drum and the paper is broken by AC corona charge given a DC bias.

J. Step 8 Fixing

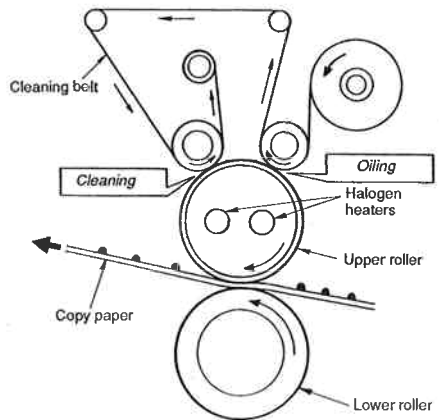


Figure 2-114

After transfer, the copy paper is moved through a pair of heat rollers, during which the toner image is fused into the fibers of the paper.

To prevent jams and toner offset, the upper roller is kept in contact, at two points, with the cleaning belt impregnated with silicone oil.

The take-up mechanism moves the belt so that it is supplied with oil and cleans the upper roller when changing its point of contact.

K. Step 9 Drum Cleaning

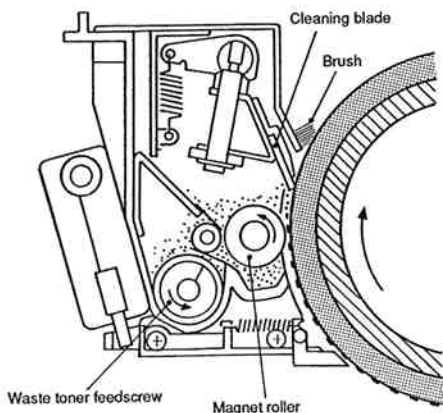


Figure 2-115

The cleaning blade scrapes the residual toner off the drum surface in preparation for the next copy run, ensuring reproduction of crisp images.

The toner scraped by the cleaning blade is collected by the magnet roller and, by the cleaning screw, is sent to the rear of the machine for collection in the waste toner receptacle.

To ensure good contact between the drum and the cleaning blade for proper cleaning, the magnet brush of the magnet roller deposits a thin, uniform coating of toner on the drum surface.

II. AUXILIARY PROCESSES

A. Roller Electrode

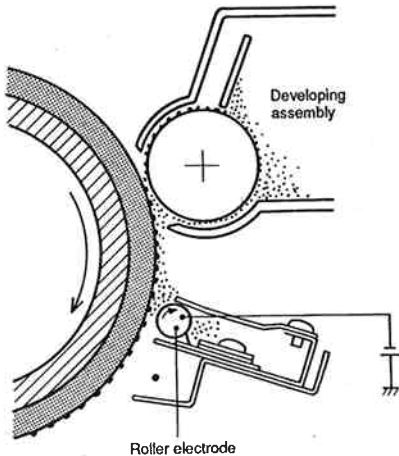


Figure 2-201

A DC bias (negative component) is applied to the roller electrode to attract excess toner from the drum surface to the electrode. This mechanism prevents soiling of the pre-transfer corona assembly and the transfer corona assembly.

B. Separation Claw

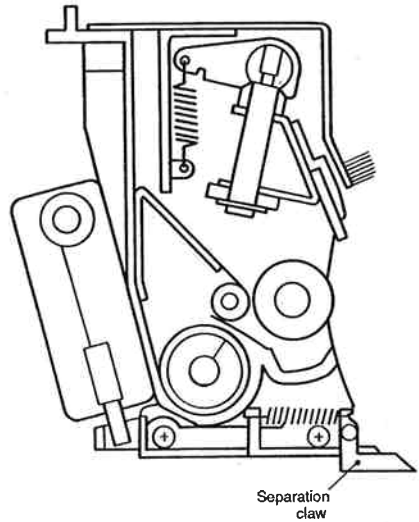


Figure 2-202

Copy paper, if not separated from the photo-sensitive drum because of faulty pre-transfer or faulty separation corona exposure, tends to move into the cleaning assembly. To prevent the problem, the bottom of the cleaning assembly is provided with separation claws to force the paper off the drum.

C. Blank Exposure Lamp

The blank exposure lamp (LEDs) goes ON when the drum is rotating and the scanner is moving forward without exposing the document; this is to eliminate the charges in the non-imaging areas of the drum surface, thereby preventing adhesion of unwanted toner.

The lamp goes ON also to blank out the non-imaging areas that vary to suit different reproduction ratios and paper widths.

D. Ozone Filter

The exhaust fan assembly and the feeder fan assembly are equipped with a filter to prevent leakage of ozone occurring in the corona assemblies.

E. Static Eliminator

The outlet from the delivery assembly is equipped with a static eliminator consisting of a grounded brush to remove the residual charges.

CHAPTER 3

OPERATION

In outline diagrams,  represents mechanical drive paths, and  indicates electrical signal paths.

In this chapter, the expression "switch the machine ON" refers to the state in which the power switch is shifted to 'I', the front door is closed, and the delivery door is closed, thereby supplying the machine with power.

Signals in digital circuits are identified as '1' for High and '0' for Low. The voltage of signals, however, depends on the circuit.

Nearly all operations of the machine are controlled by microprocessors; the internal workings of these processors are not relevant to the service engineer's work and, therefore, left out of the discussions. By the same token, no repairs are prescribed for the PCBs at the user's premises; for this reason, PCBs are discussed by means of block diagrams rather than circuit diagrams.

For the purpose of explanation, discussions are divided into the following: from sensors to DC controller PCB input ports; from DC controller output ports to loads; and minor control circuits and functions.

I. FUNDAMENTALS OF OPERATION	3-1
II. EXPOSURE SYSTEM	3-28
III. IMAGE FORMATION SYSTEM	3-38
IV. PICK-UP/FEEEDER SYSTEM	3-64

V. FANS	3-124
VI. POWER SUPPLY	3-126
VII. COMPUTER FORM FEEDER (C.F.F.)	3-129
VIII. SERVICE MODE	3-141

I. FUNDAMENTALS OF OPERATION

A. Basic Construction

The operating mechanisms of the copier can be divided into four main blocks; i.e., pick-up/feeder system, exposure system, image formation system, and control system.

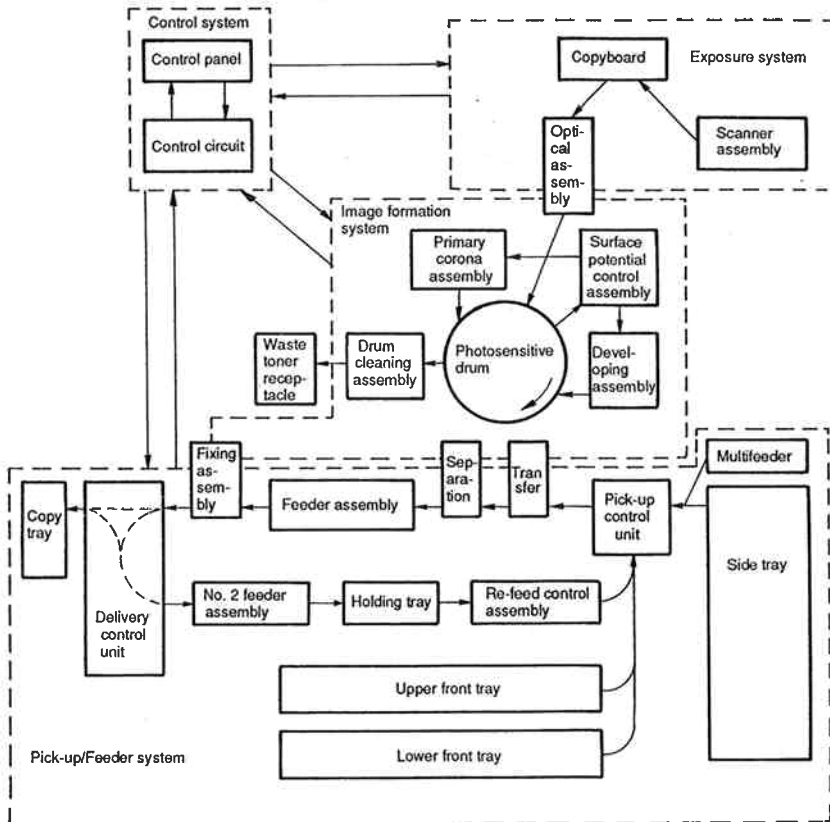


Figure 3-101

B. Outline of Electrical Circuitry

The two microprocessors on the DC controller PCB controls the copier's electrical mechanisms.

The names and the functions of these microprocessors are as follows:

- ① Q101 (microprocessor; master)
 - Controls copy sequence.
 - Controls high voltage.
 - Controls fixing temperature.
 - Controls scanner drive.
 - Controls pick-up/feeding operation.
- ② Q278 (microprocessor; slave)
 - Controls lens motor (X, Y).
 - Controls blank exposure LEDs.
 - Controls control panel.
 - Controls analog signal input.
 - thermistor signal
 - potential signal
 - ambient temperature signal
 - manual feed paper size signal
 - Controls paper guide shift motor.

The master (Q101) and the slave (Q278) communicate with each other through RAM (Q118)

Communication with the RDF-A1, sorter, or C.F.F., on the other hand, is handled by the communication IC (IPC) on each controller PCB and the communication IC on the copier's DC controller PCB.

Figure 3-102 shows a block diagram depicting the relationships between the major circuits of the copier.

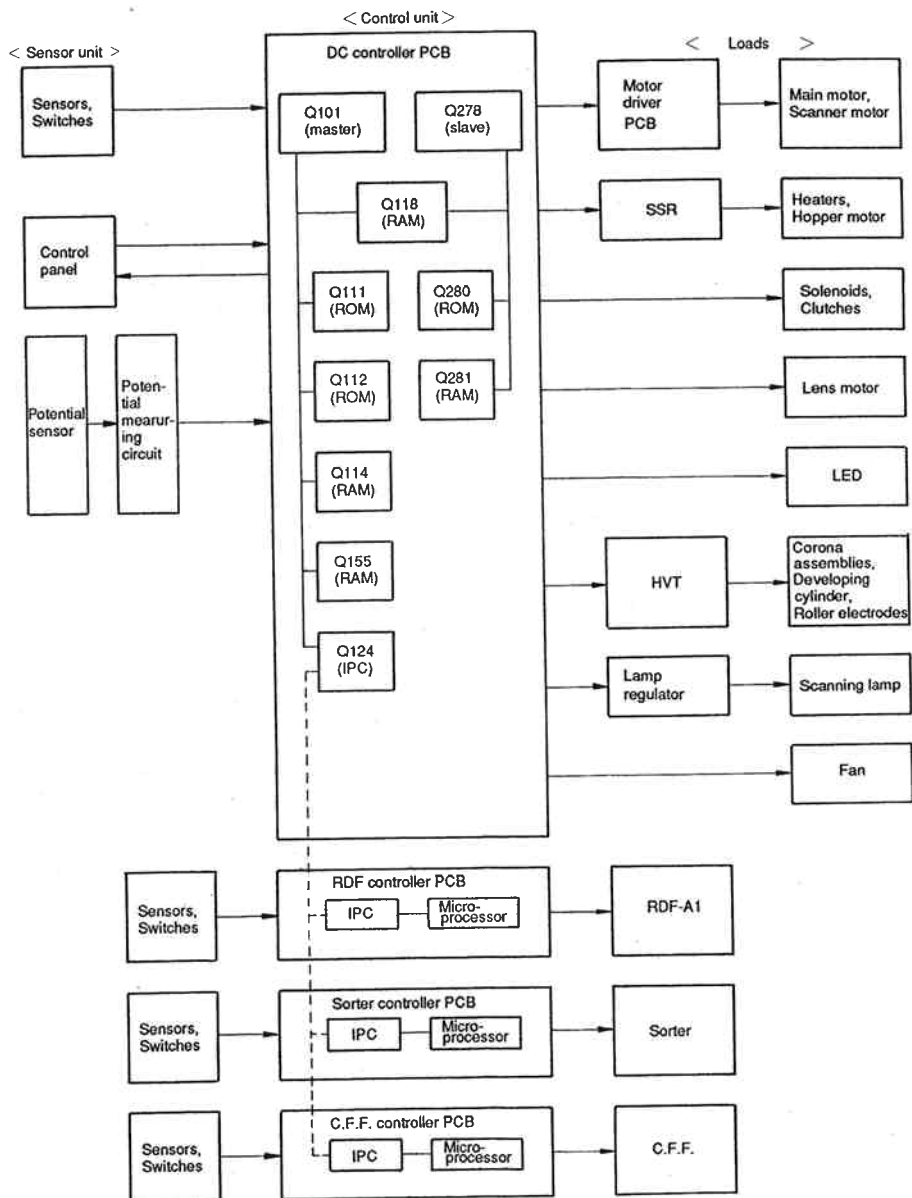


Figure 3-102

C. Inputs to DC Controller

Inputs to DC Controller (1/7)

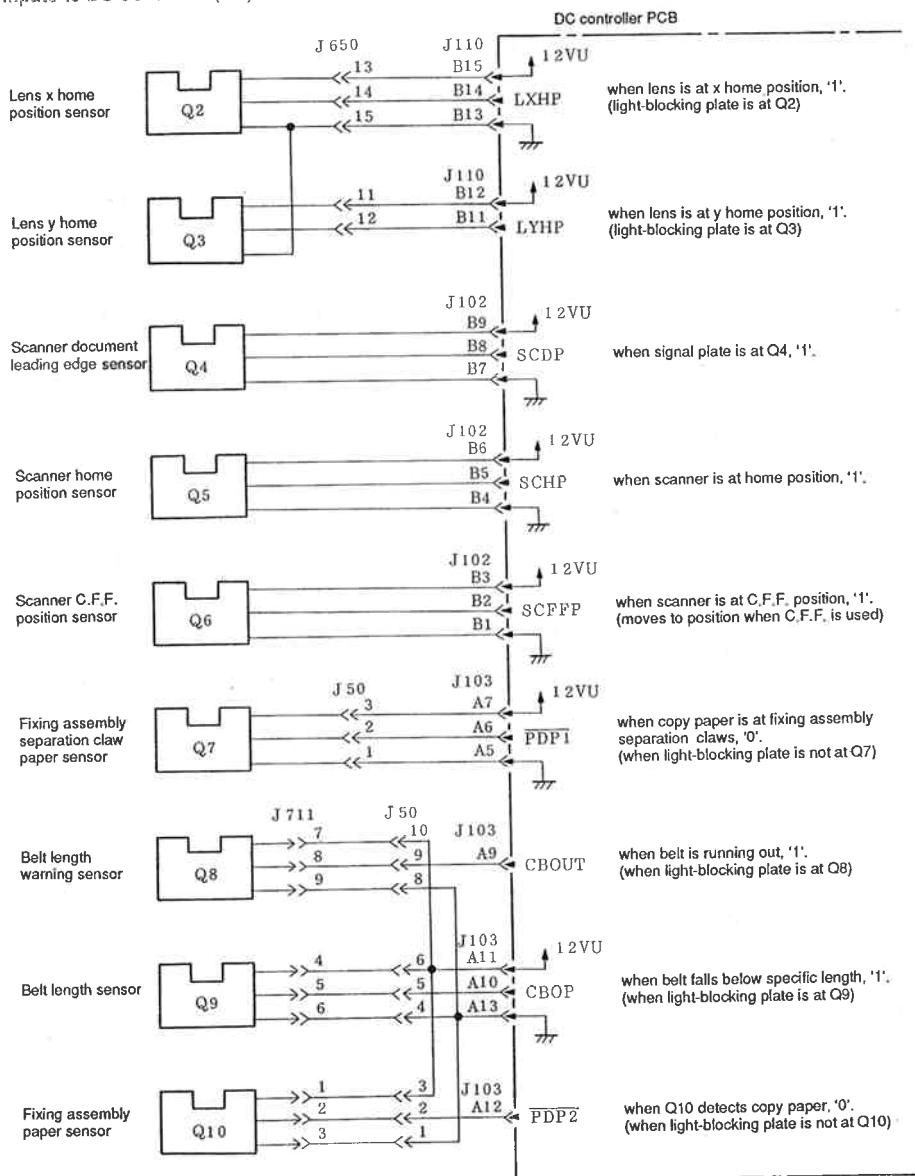


Figure 3-103

Inputs to DC Controller (2/7)

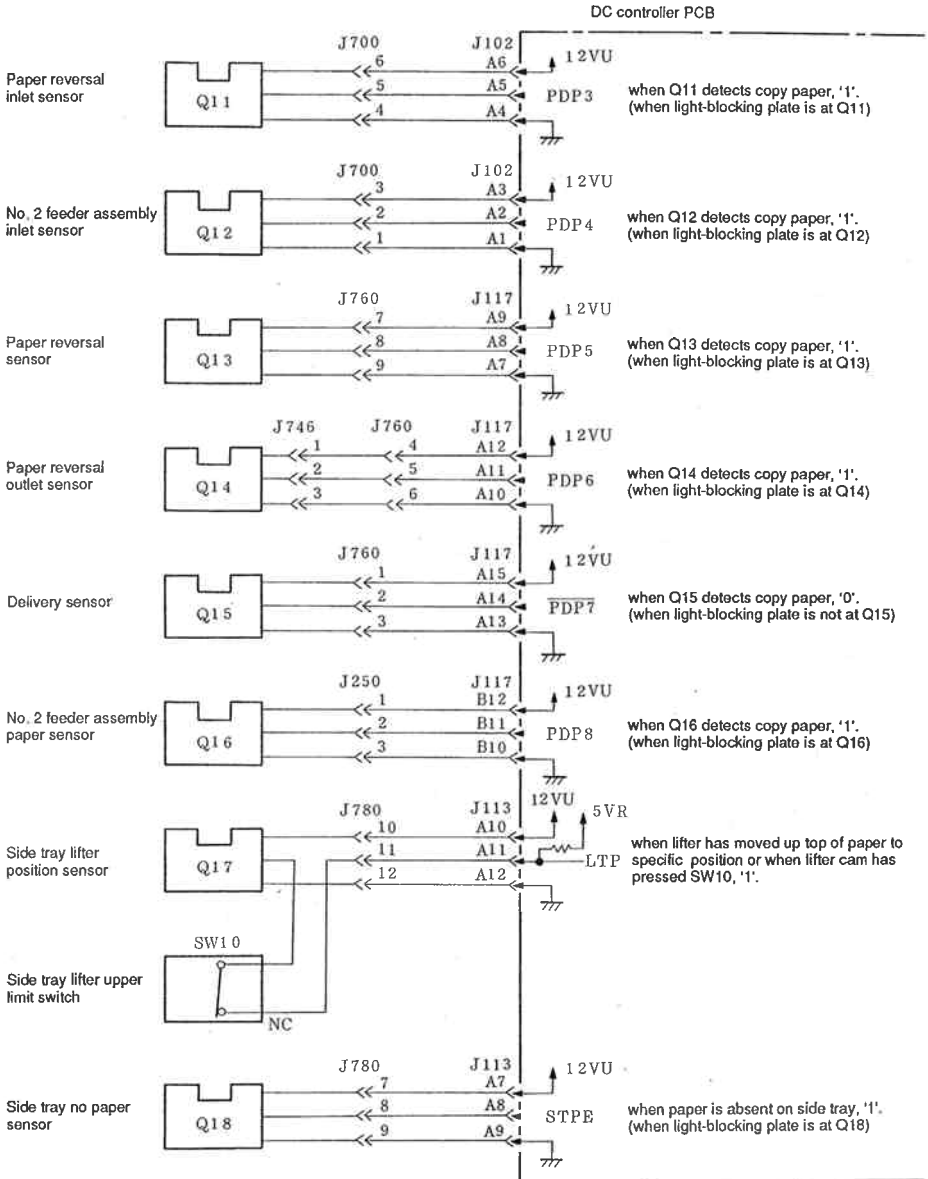


Figure 3-104

Inputs to DC Controller (3/7)

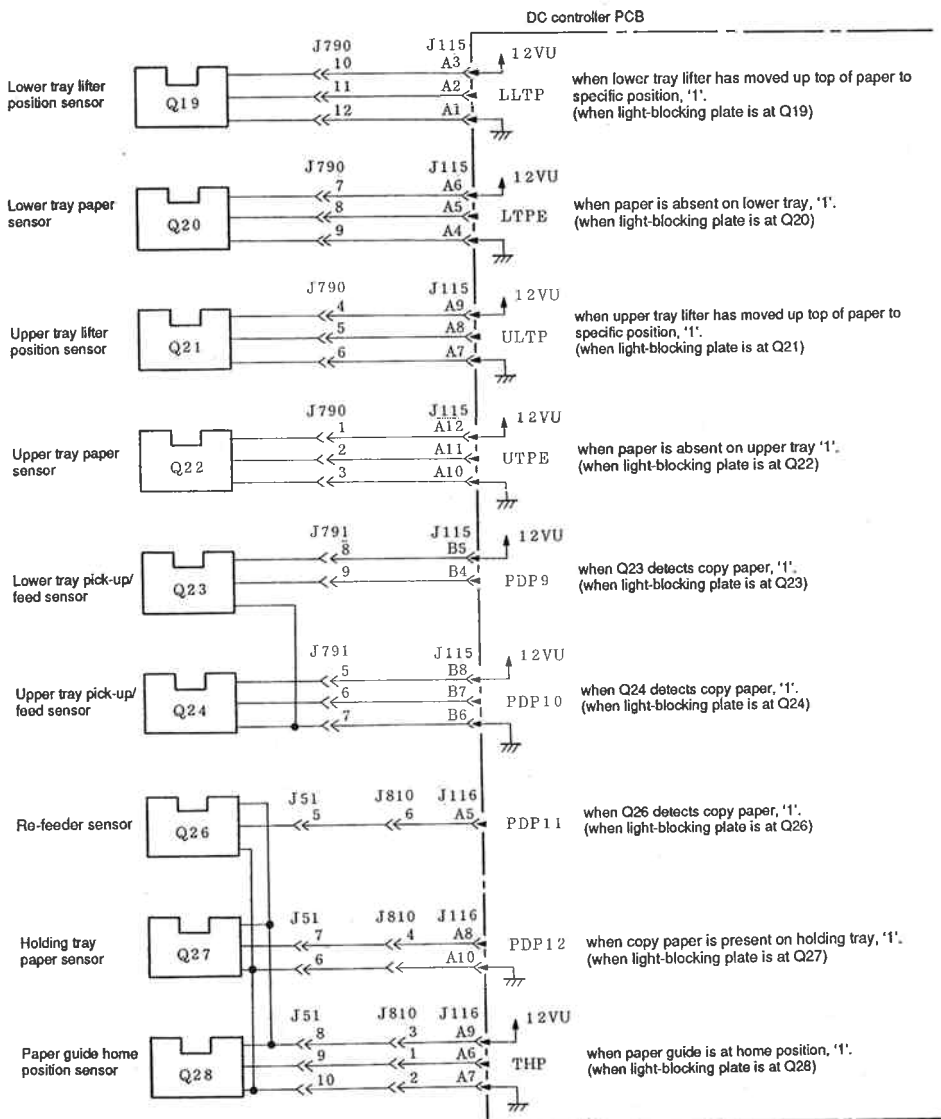


Figure 3-105

Inputs to DC Controller (4/7)

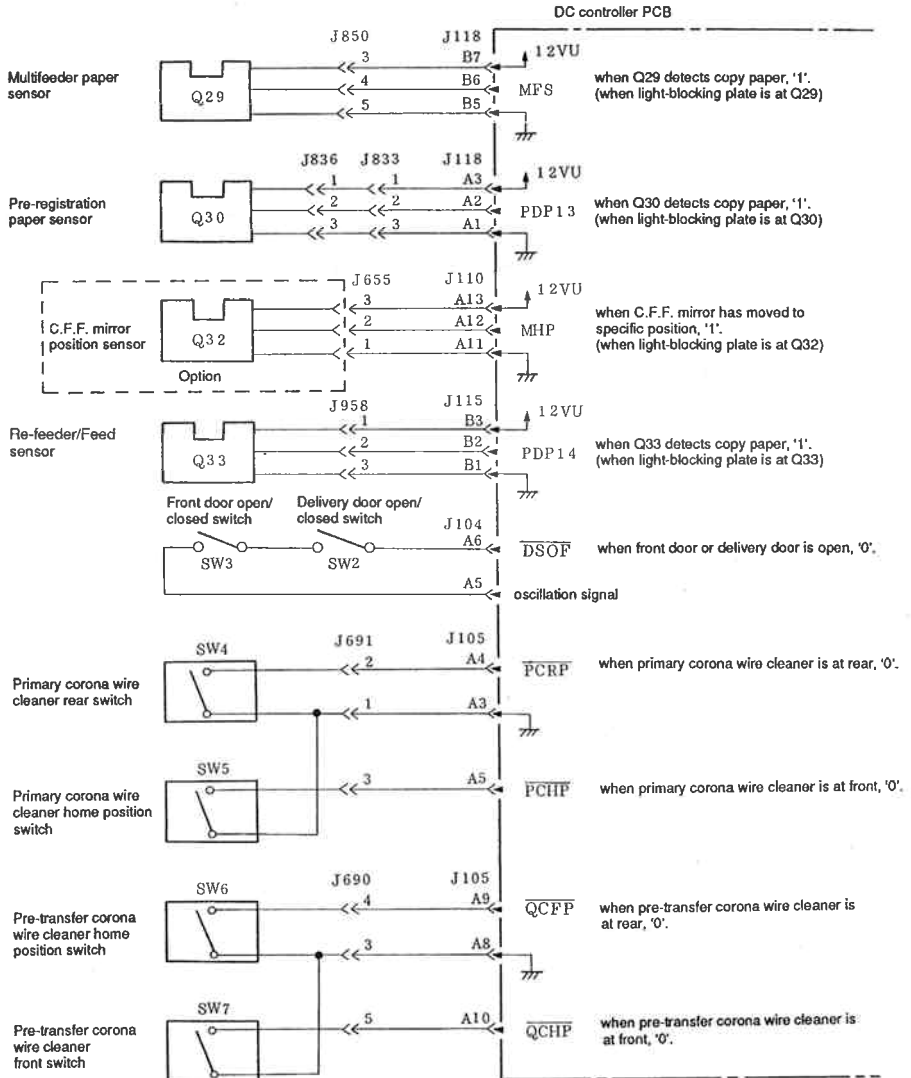


Figure 3-106

Inputs to DC Controller (5/7)

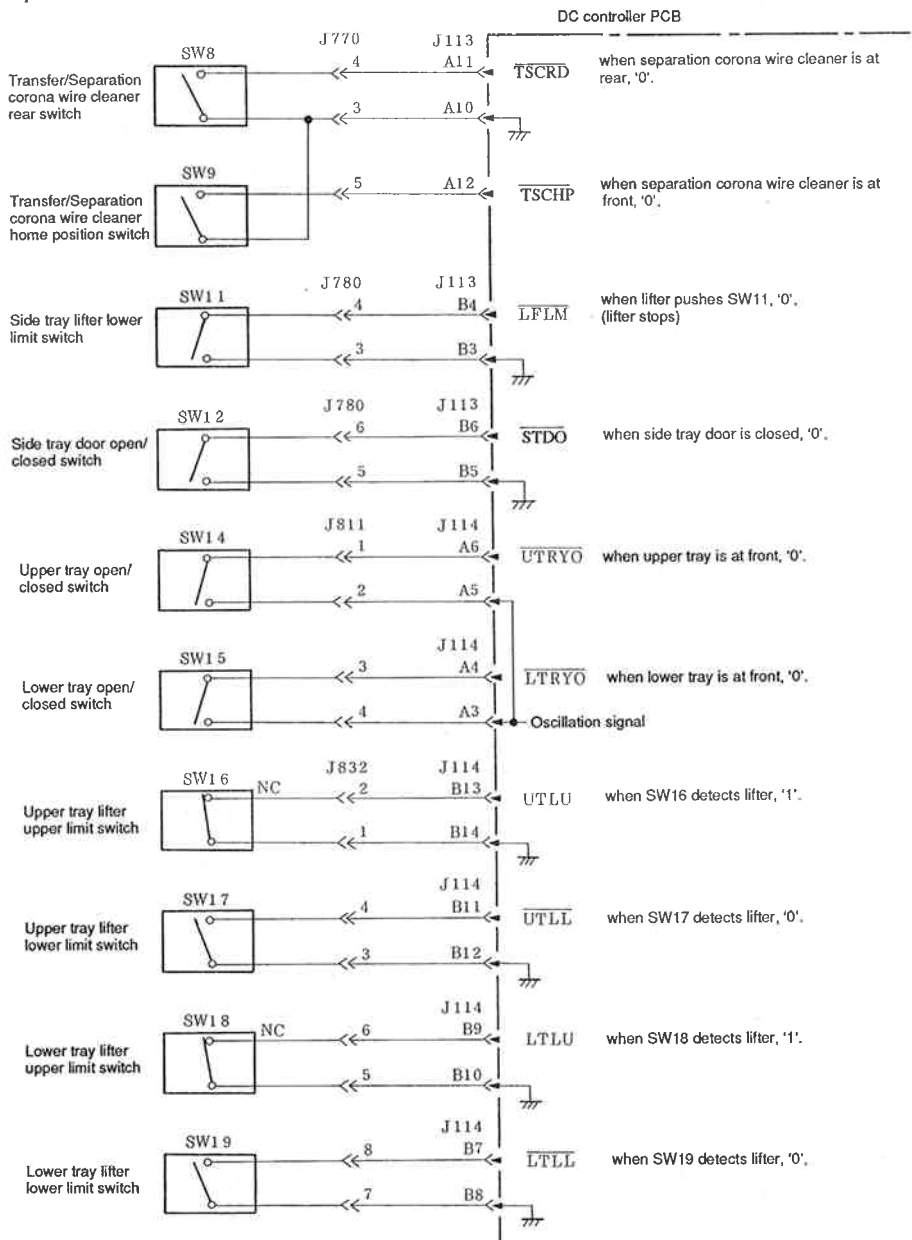


Figure 3-107

Inputs to DC Controller (6/7)

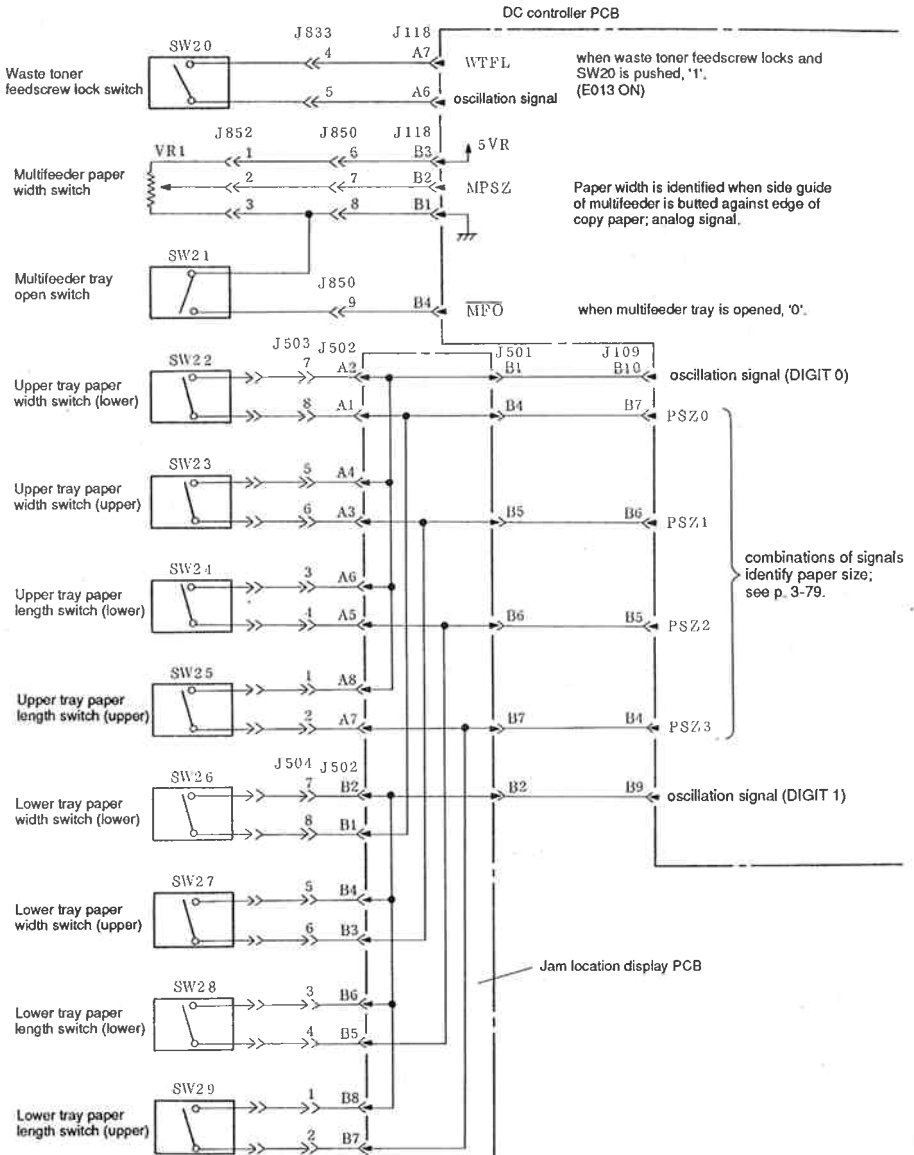


Figure 3-108

Inputs to DC Controller (7/7)

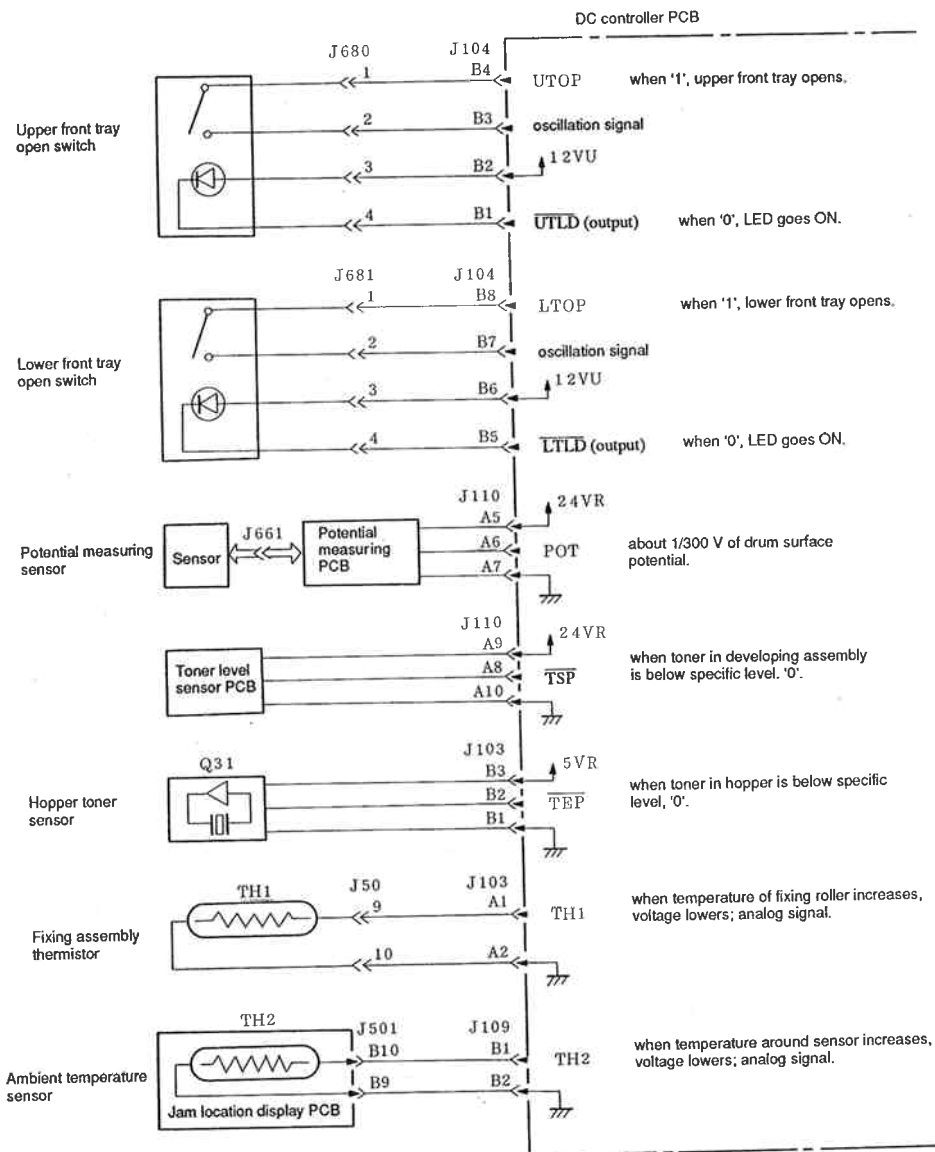


Figure 3-109

D. Outputs from DC Controller

Outputs from DC Controller (1/8)

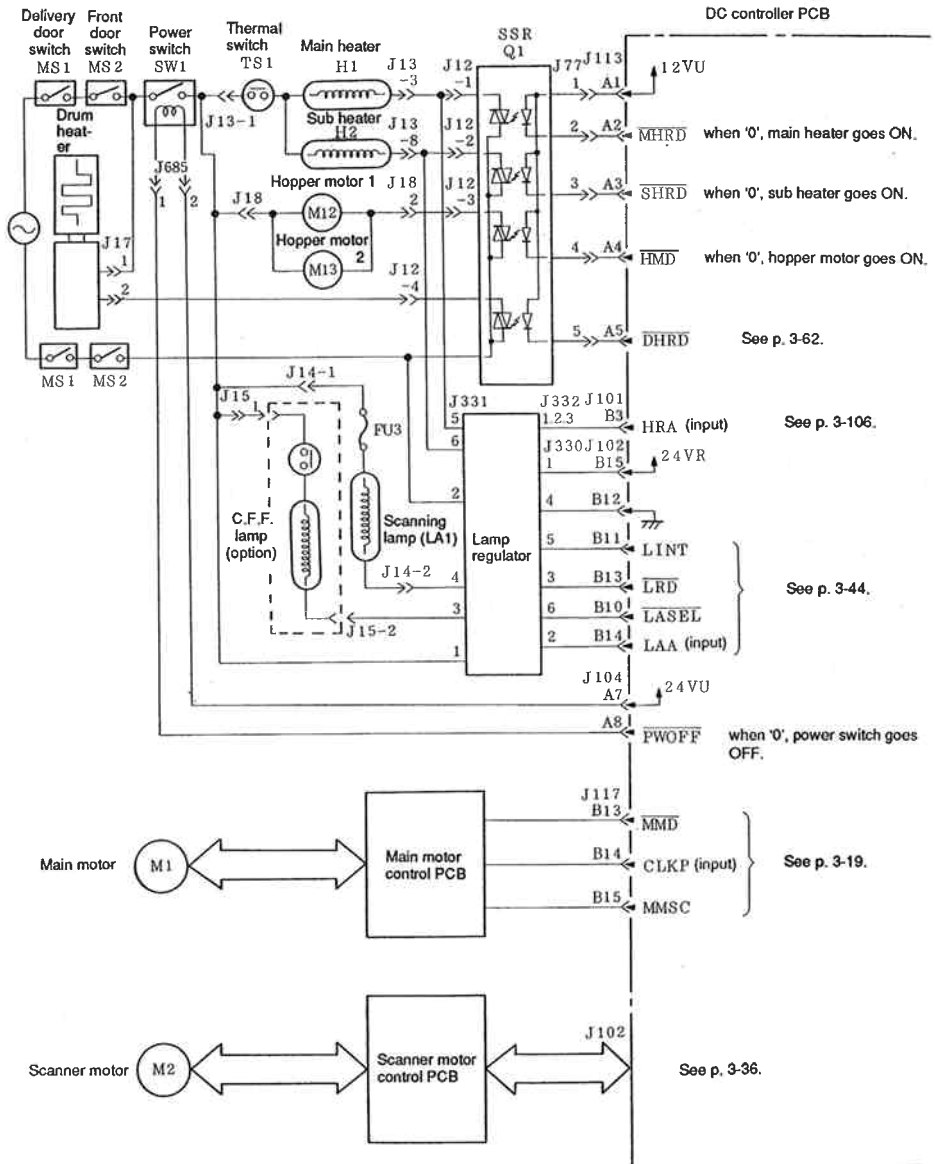


Figure 3-110

Outputs from DC Controller (2/8)

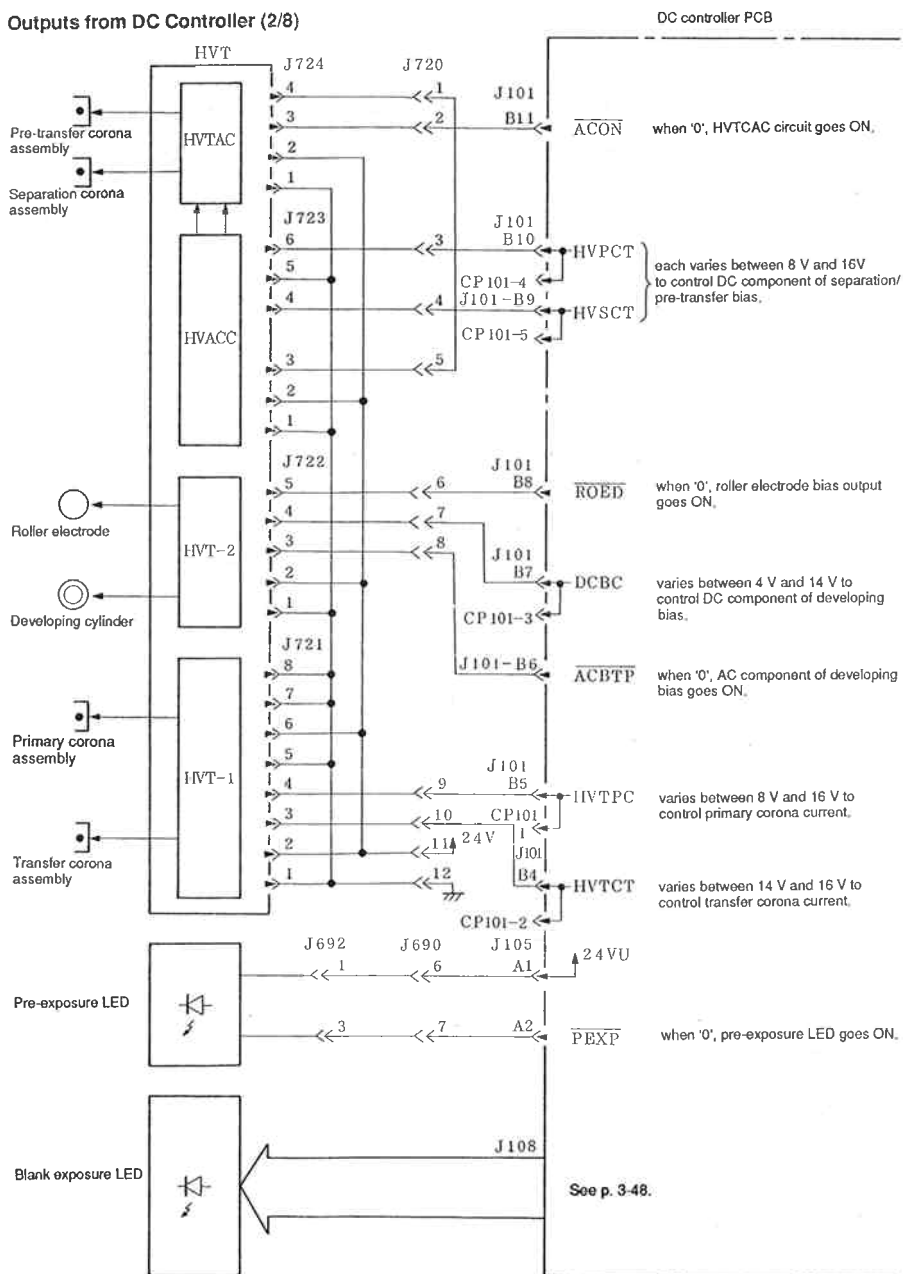


Figure 3-111

Outputs from DC Controller (3/8)

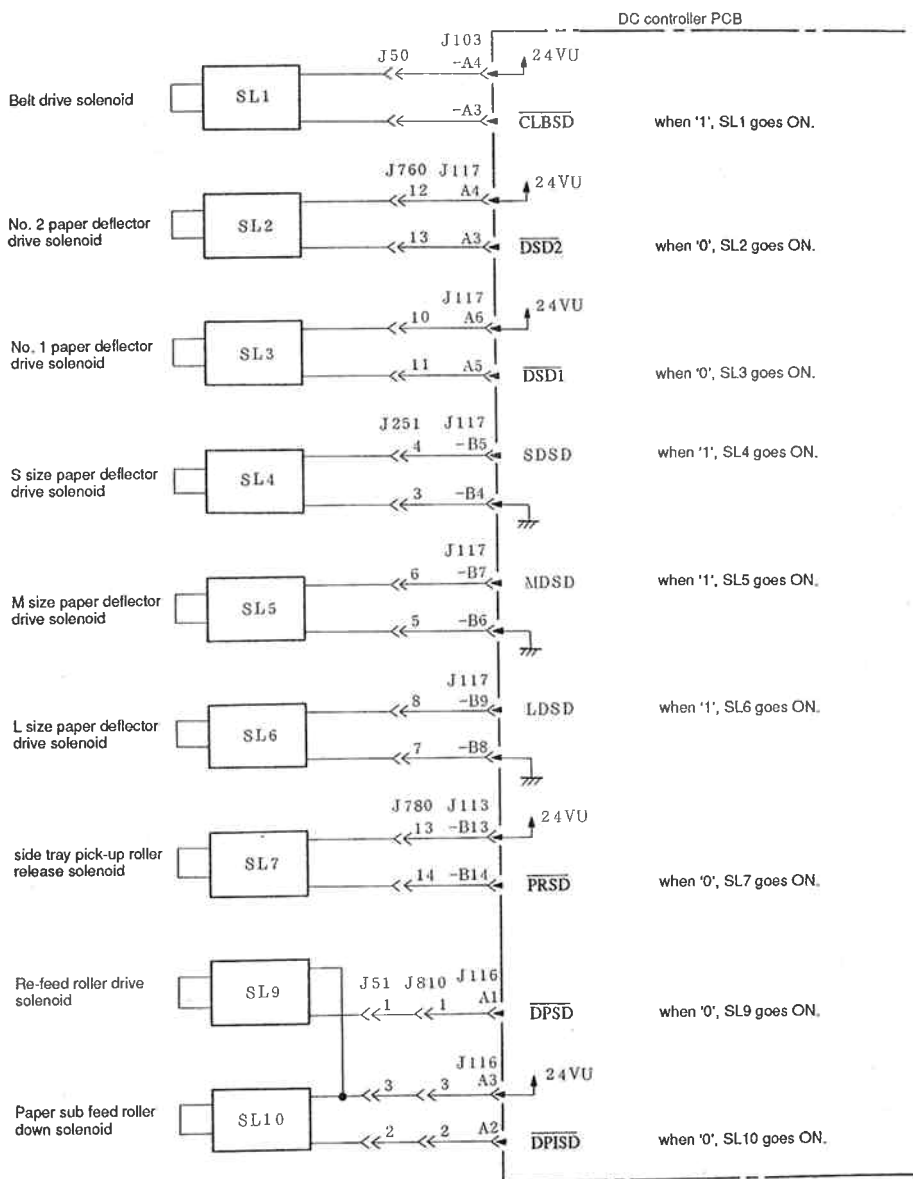


Figure 3-112

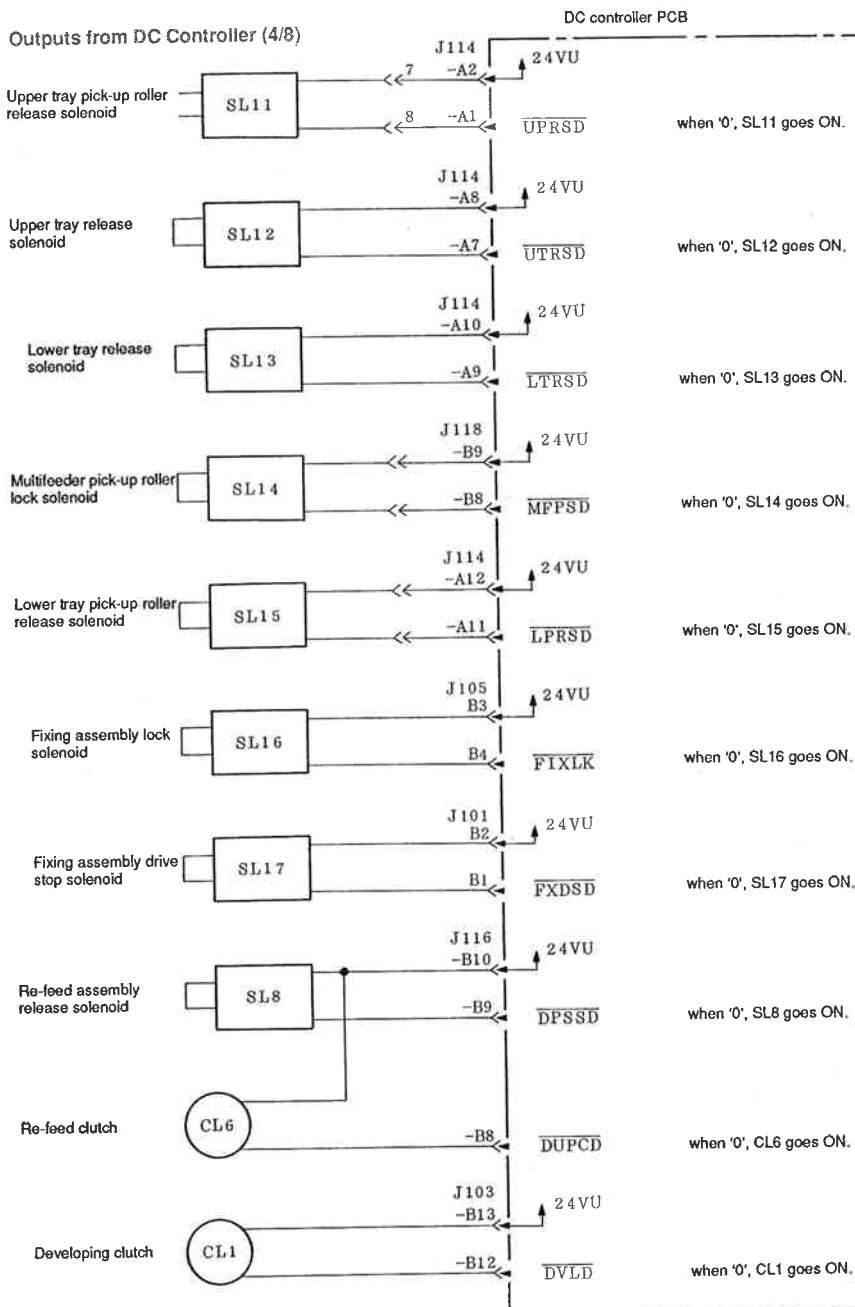


Figure 3-113

Outputs from DC Controller (5/8)

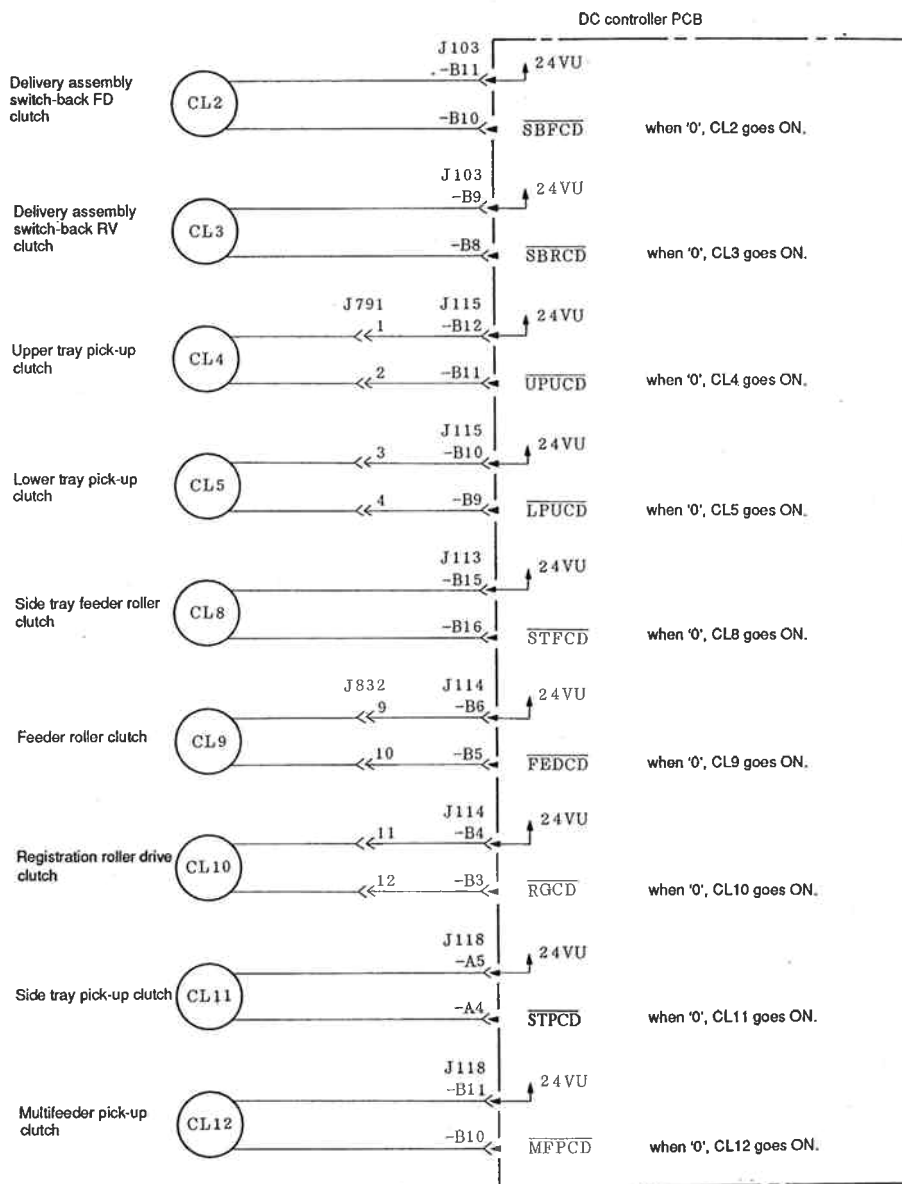


Figure 3-114

Outputs from DC Controller (6/8)

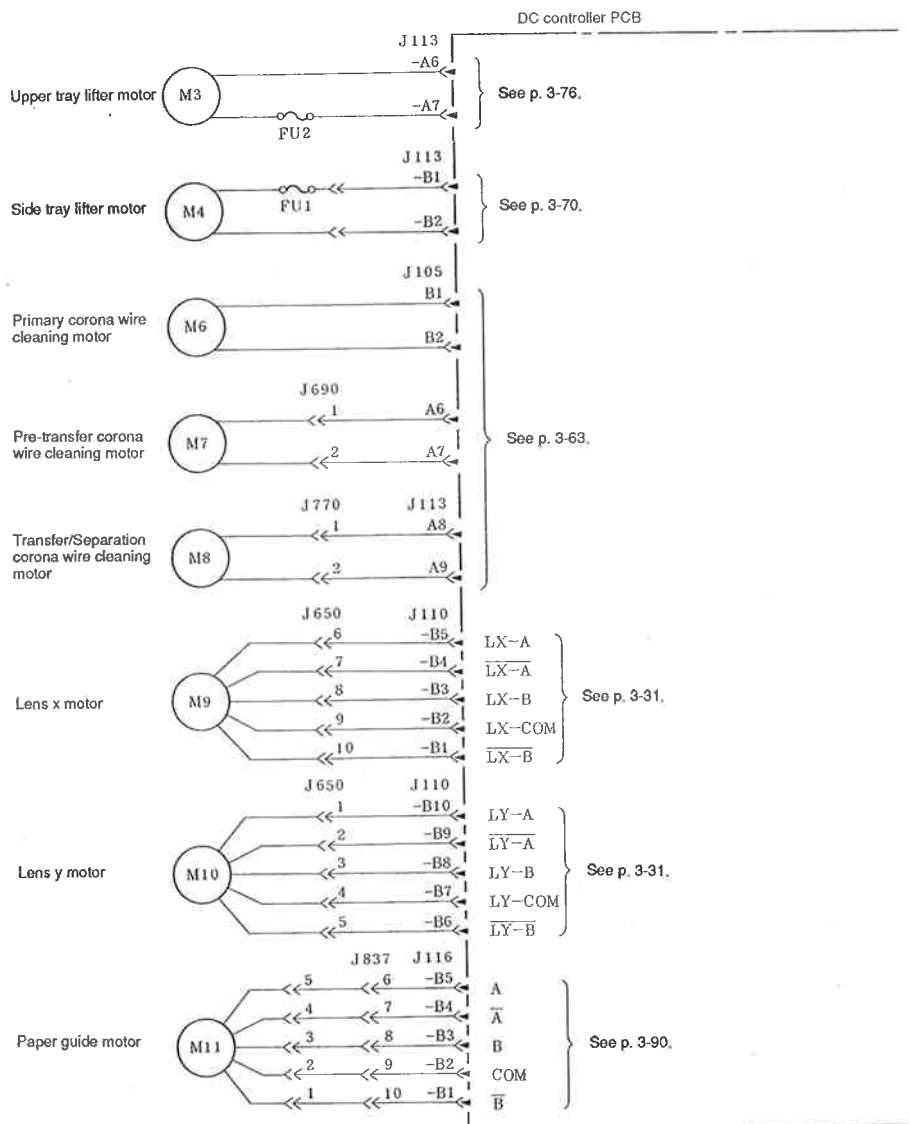


Figure 3-115

Outputs from DC Controller (7/8)

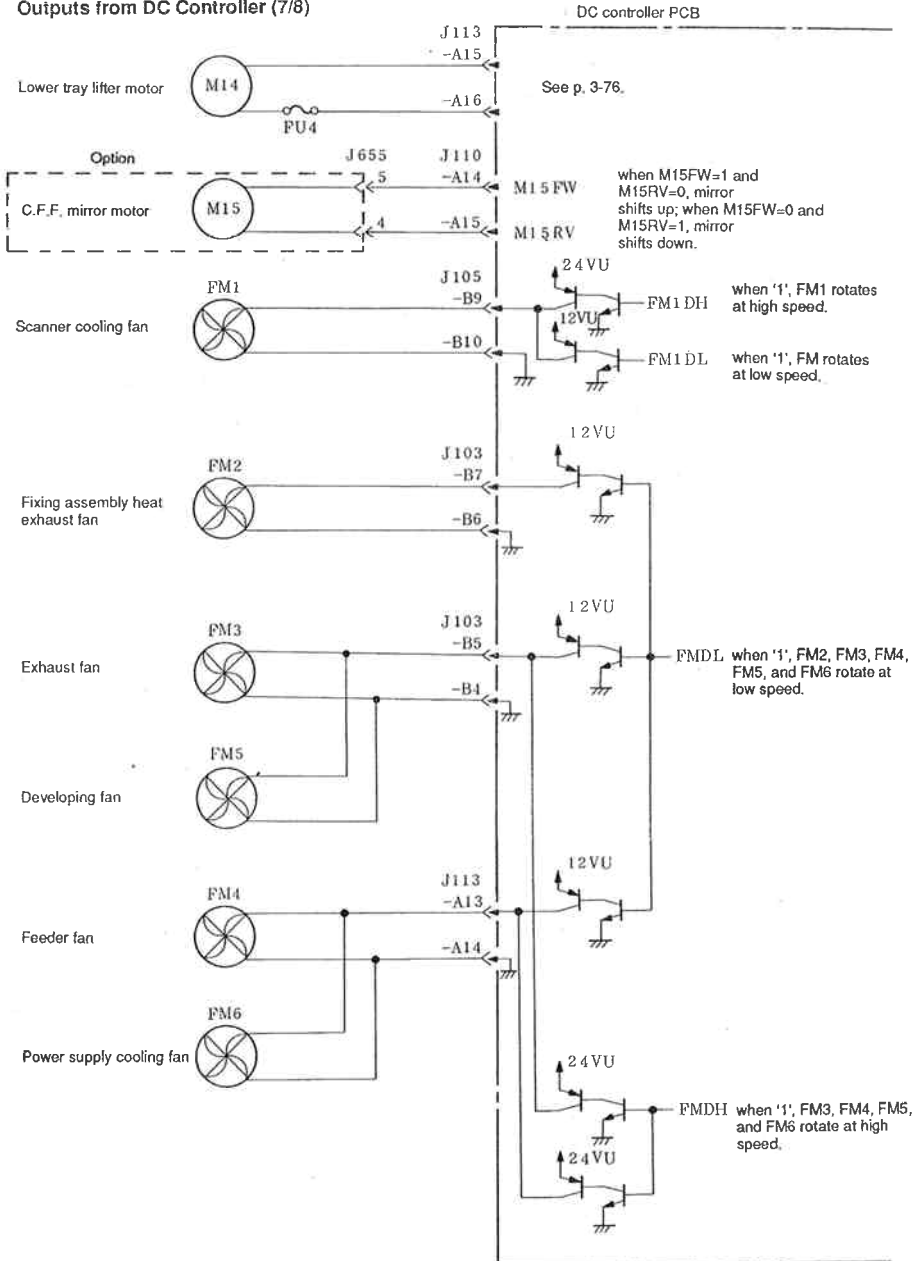


Figure 3-116

Outputs from DC Controller (8/8)

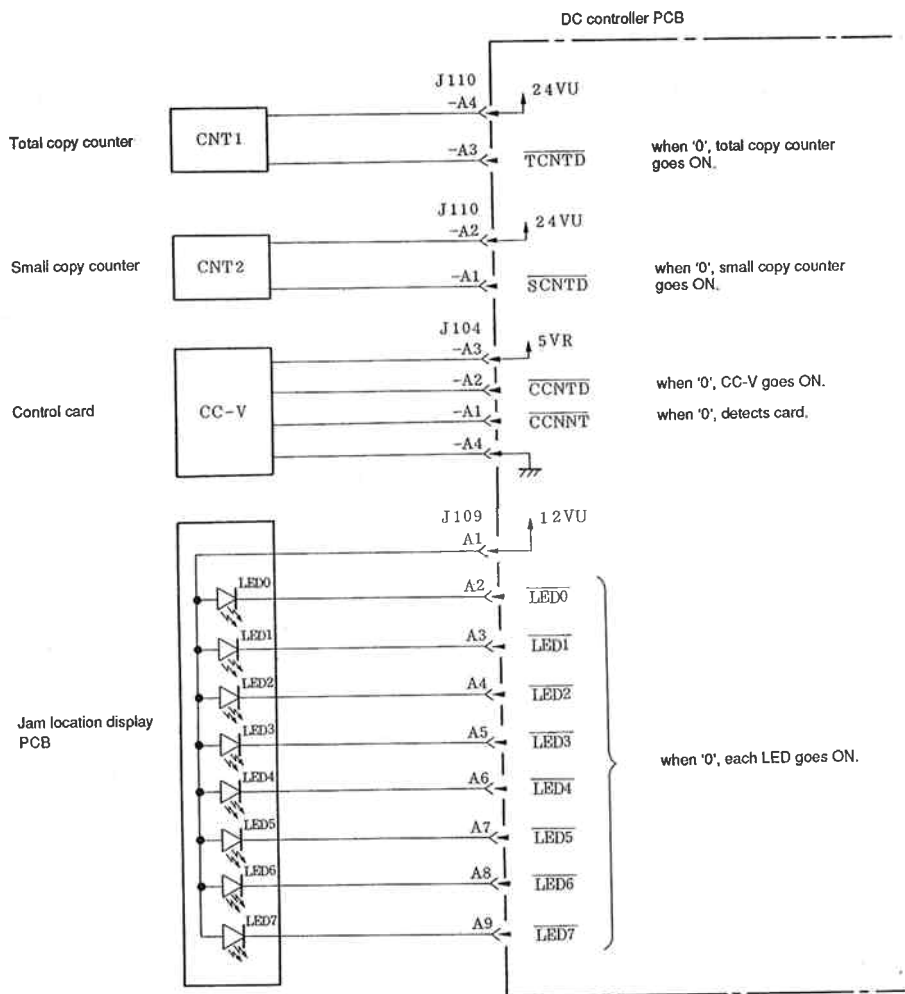


Figure 3-117

E. Main Motor Control Circuit

1. Outline

Figure 3-118 shows a block diagram depicting the main motor control circuit, which have the following functions:

- ① Turns the main motor ON/OFF
- ② Switches the speed of the main motor
- ③ Maintains the speed of the main motor

The main motor is a DC motor with a built-in clock pulse generator. When the motor rotates, clock pulses (MMCLK) are generated in numbers proportional to the revolutions of the motor.

Using these pulses, the main motor control PCB maintains the correct rotation of the motor.

The clock pulses (MMCLK) are frequency-divided to 1/4 to generate clock pulses CLKP, sent to the DC controller PCB for sequence control.

2. Mechanism

a. Turning the Main Motor ON/OFF

When the main motor drive signal (MMD) goes '0', the phase comparator circuit and the frequency comparator circuit shown in Figure 3-118 generate control signals.

The control signals from both circuits are sent to the motor drive circuit, causing the motor drive circuit to go ON and rotating the main motor.

When MMD signal goes '1', on the other hand, the output of the control signals stops, keeping the main motor at rest.

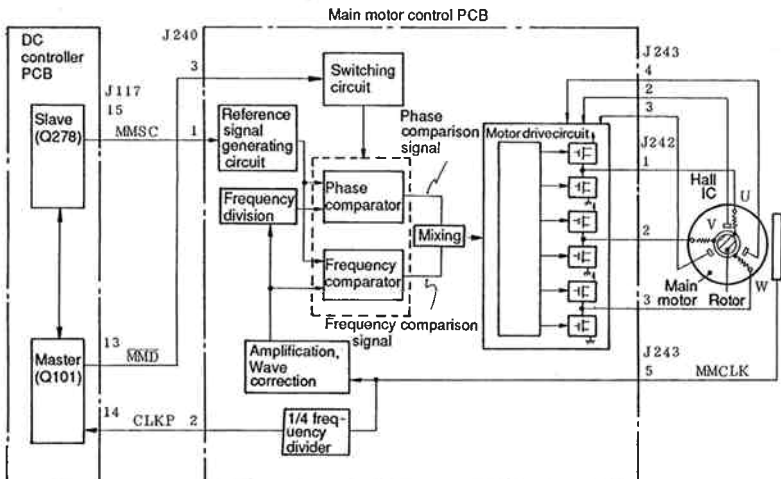


Figure 3-118

b. Switching and Controlling the Speed

The main motor rotates at three different speeds; see Table 3-101. The speed is switched by the main motor speed control signal (MMSC) generated by the DC controller PCB.

The MMSC signal is a pulse signal either of a frequency for high speed or of a frequency for medium or low speed, selected automatically based on the machine's conditions given in Table 3-101.

The reference signal generating circuit on the motor control PCB generates reference pulses for high-, medium-, or low-speed reference pulses according to the frequency of the MMSC signal. The reference pulses are sent to the phase comparator circuit and the frequency comparator circuit.

The phase comparator circuit generates control signals (phase comparison signal) to match the phases of the clock pulse (MMCLK) from the main motor and the phase of the reference pulse.

Likewise, the frequency comparator circuit generates control signals (frequency comparison signal) to match the frequency of the clock pulse (MMCLK) from the main motor and that of the reference pulse.

The phase comparison signal and the frequency comparison signal are mixed and then sent to the motor drive circuit for controlling the power to the main motor, thereby switching the speed and the revolution of the motor at the same time.

3. Error Detection

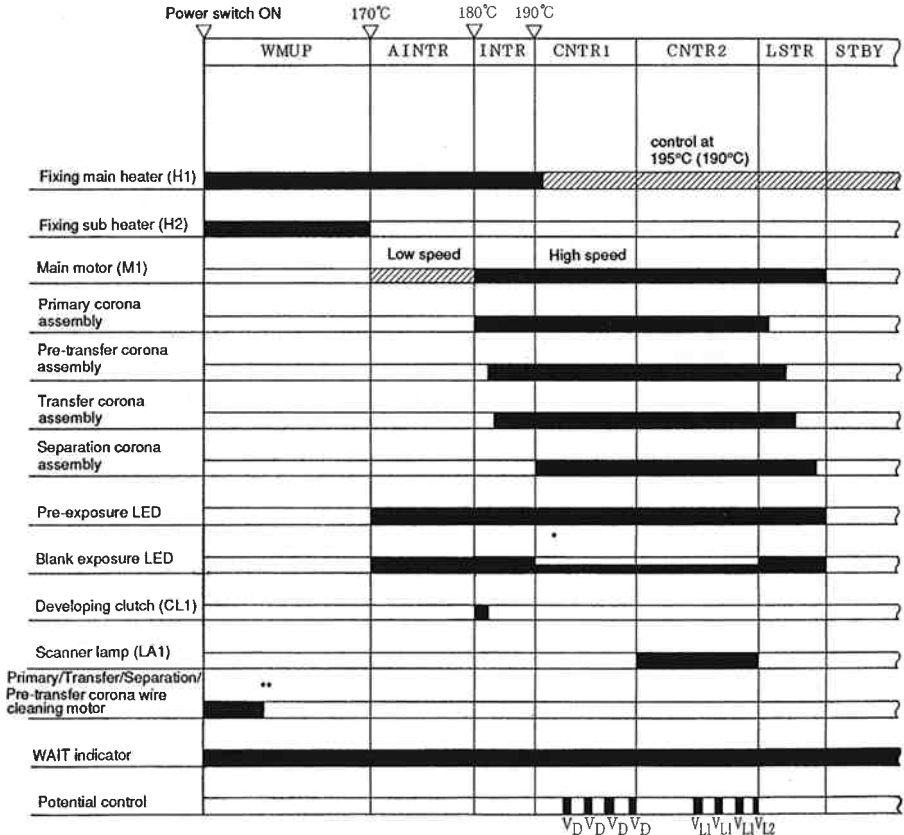
If the main motor suffers a large load for some reason, the DC controller PCB detects the error in the clock pulses from the motor and then displays 'E010' and a message on the control panel.

Speed of main motor	Condition of copier
High speed	Reproduction ratio of 64% or more selected
Medium speed	① Reproduction ratio of 63% or less selected. ② Overlay copying selected. ③ C.F.F. in use.
Low speed	AINTR

Table 3-101

F. Basic Sequence

1. At Time of Power-On (1/2)



Values in parentheses refer to the control temperature 45 min after the machine is switched ON or when the room temperature is 28°C or more regardless of passage of time.

* LED OFF (Potential sensor only).

** If the fixing temperature is 160°C or less when the machine is switched ON, cleaning of the primary/pre-transfer/separation corona wire is executed; also for each 2,000 copies.

Figure 3-119

2. At Time of Power-On (2/2)

Automatic Start Selected

If the COPY START key is pressed between WMUP and LSTR (wait period), copying operation will start automatically as soon as the copier is ready (standby state).

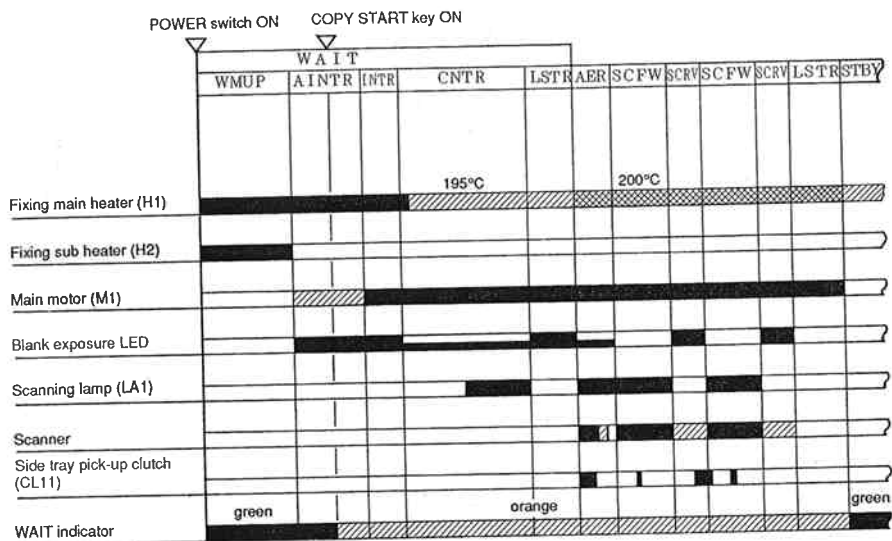
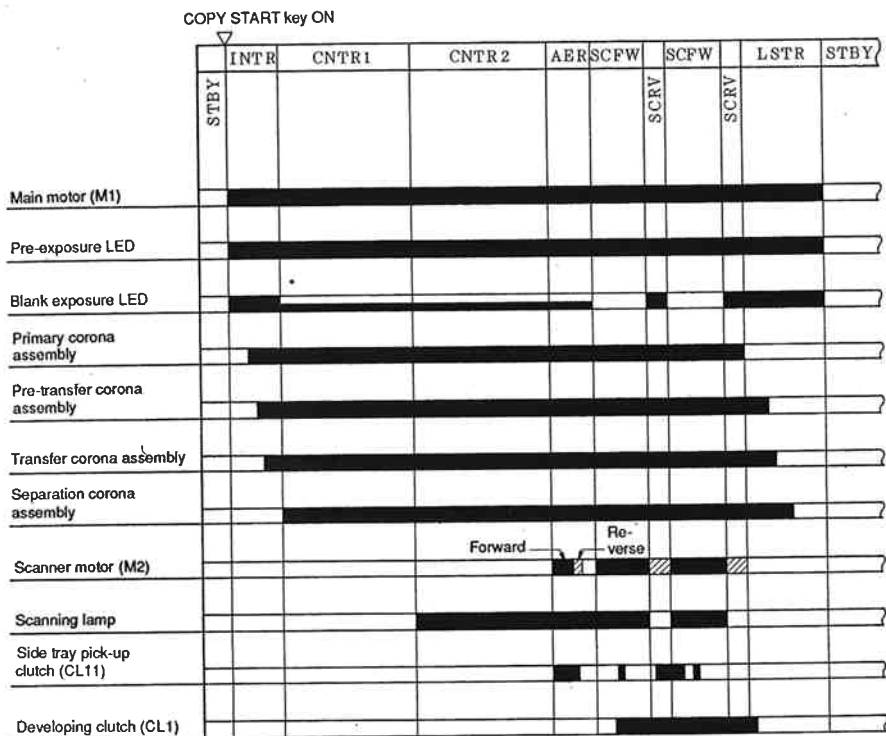


Figure 3-120

Period		Description	Remarks
WAIT (wait)	WMUP (warm-up)	From when the machine is switched ON to when the surface temperature of the fixing assembly upper roller reaches 170°C.	- Waits for the fixing assembly to become heated. - If the temperature of the fixing roller is 160°C or less at time of power-ON, the primary, pre-transfer, separation, and transfer corona wires are cleaned. - The lens moved to the DIRECT position (A4 (LTR) width).
	AINTR (additional initial rotation)	From when WMUP is over to when the surface temperature of the upper fixing roller reaches 180°C.	- Evens out the surface temperature of the fixing roller. - Discharges copy paper, if any. - The main motor rotates at low speed. - AINTR is executed even if the temperature of the upper fixing roller is 180°C or more at the time of power-ON.
	INTR (initial rotation)	From when the surface temperature of the upper fixing roller has reached 190°C until CNTR1 starts.	The drum is rotated at high speed to stabilize the drum sensitivity in preparation for copying operation.
	CNTR1 (control rotation 1)	For about 2 sec after INTR is over.	The drum surface potential (V_0) is controlled.
	CNTR2 (control rotation 2)	For about 2.6 sec after CNTR1 is over.	This is to determine the value of the developing bias (DC component) for copying operation to suit the measurements of V_{L2} .
	LSTR (last rotation)	While the photosensitive drum makes a single rotation.	The surface of the drum is cleaned (electrostatic).
STBY		From when LSTR is over until the COPY START key is pressed or the machine is switched OFF.	- Waits for a key operation (COPY START key or others). 2 min after LSTR, the indicators on the control panel change to standard mode. - Copying operation is started after LSTR if the auto start has been activated.

Table 3-102

3. Copying Operation



*LED OFF(potential sensor only).

Figure 3-121

Period		Description	Remarks
INTR (initial rotation)	From when the COPY START key is pressed to when CNTR1 begins.	Stabilizes the sensitivity of the drum in preparation for a copy run.	The lens is moved; if the lens fails to reach the specified position within a specific time, INTR is continued until the movement is complete.
CNTR1 (control rotation 1)	For about 2 sec after INTR is over.	Controls the drum surface potential (V_D).	The scanner motor is rotated in reverse before potential control is executed to return the scanner to the home position.
CNTR2 (control rotation 2)	For about 2.6 sec after CNTR1 is over.	Controls the drum surface potential (V_L).	The developing bias (DC component) is determined for copying operation according to the measurement of V_{L2} .
AER (AE rotation)	Until the scanner returns to the home position after having moved about 120 mm.	Measures the density of the document while the scanner is moving in reverse.	Control is executed only in the AE mode.
SCFW (scanner forward)	While the scanner is moving forward. • The distance varies depending on the size of the copy paper and the reproduction ratio. • The speed varies depending on the reproduction ratio.	The scanning lamp exposes the document, and the reflected image is directed to the photo-sensitive drum through mirrors and lenses.	• The registration signal is generated, and the copy paper is moved to the transfer assembly. • The pick-up signal is generated, and the second copy paper is picked up.
SCRV (scanner reverse)	While the scanner is moving in reverse.	The scanner is returned to the home position in preparation for the next copy run.	
LSTR (last rotation)	From when SCRv is over to when the main motor stops.	The drum surface is cleaned electrostatically.	Discharges the last copy paper.

Table 3-103

4. Page Separation

In the page separation mode, the document on the left side of the copyboard is copied (SCFW1) and then the one on the right side (SCFW2).

If '2' or a higher number is set as the copy count, the document on the left side of the copyboard is copied first for that number and then the one on the right side.

AE in the page separation mode is executed using the AE mode of the copier. For this reason, the density of the document is measured over a width of 120 mm from the leading edge of the document. The measurement is used for copying documents on both left and right sides.

Note:

- i. Potential control rotation (CNTR1, 2) is executed after INTR if the conditions for measurement on p. 3-41 are met.
- ii. Page separation is available only for A4 and B5 size copies.

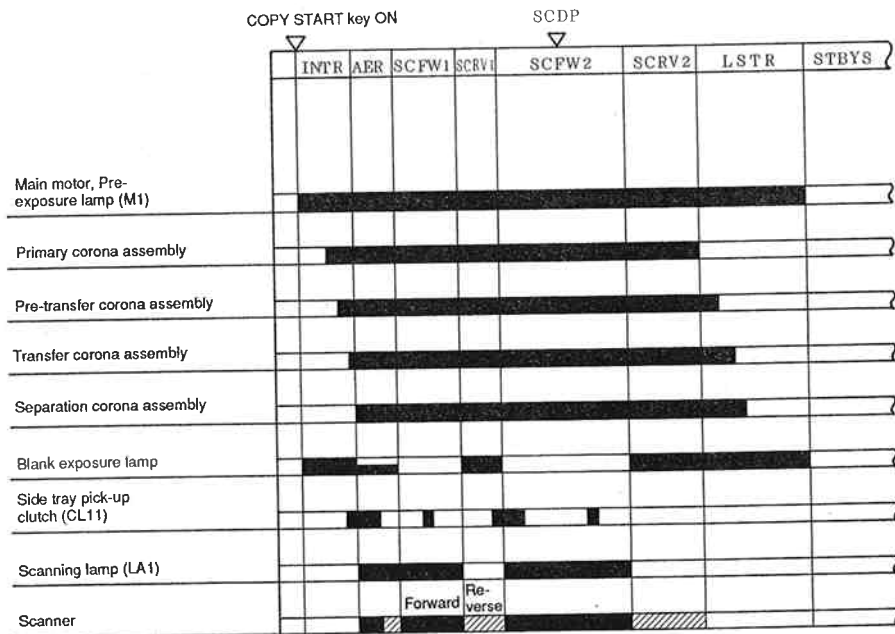


Figure 3-122

Period		Description	Remarks
SCFW1 (scanner forward 1; left document copy)	While the scanner is moving forward. The distance varies depending on the size of the copy paper and the reproduction ratio.	The scanning lamp exposes the document on the left side of the copyboard, and the reflected image is directed to the photo-sensitive drum through mirrors and lenses.	- The registration signal is generated to move the copy paper to the transfer assembly. - The pick-up signal is generated to pick up the next copy paper.
SCRV1 (scanner reverse 1)	From when the scanner starts to move in reverse to until the copy paper is discharged.	- The scanner is returned to the home position in preparation for the next copy run. - The toner is transferred from the drum to the copy paper.	
SCFW2 (scanner forward 2; right document copy)	While the scanner is moving forward. The distance varies depending on the size of the copy paper and the reproduction ratio.	The scanning lamp exposes the document on the right side of the copyboard, and the reflected image is directed to the photo-sensitive drum through mirrors and lenses.	The registration signal is generated so that the leading edge of the image of the document on the right side and that of the copy paper match based on the SCDP signal.
SCRV (scanner reverse 2)	From when the scanner starts to move in reverse to when the developing clutch goes OFF.	- The scanner is returned to the home position in preparation for the next copy run. - The toner is transferred from the drum to the copy paper.	

Note: For copy sequences other than the above, see Table 3-103.

Table 3-104

II. EXPOSURE SYSTEM

A. Varying the Reproduction Ratios

The reproduction ratio across the drum (axial) is varied by the lens drive system, and that around the drum (circumference) is varied by the scanner drive system and the main drive system.

The lens drive system consists of a zoom lens; and, as shown in Figure 3-201, the position of the lens and the focus are varied to change the reproduction ratio across the drum.

The scanner drive system varies the speed at which the No. 1 mirror is moved to vary the reproduction ratio around the drum; speeding up for reduction, and slowing down for enlargement.

Note:

- i. The machine does not change the relative distance between mirrors.
- ii. In the DIRECT mode, the speed at which the No. 1 mirror moves and the peripheral speed of the drum are the same.

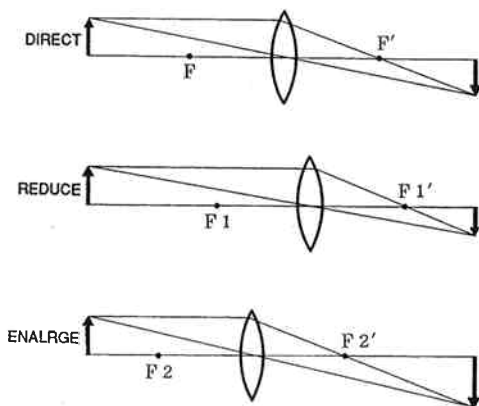


Figure 3-201

B. Lens Drive System

1. Outline

Figure 3-202 shows the position of copy paper in the pick-up/feeder assembly of conventional machines and Figure 3-203, that of the NP-6060.

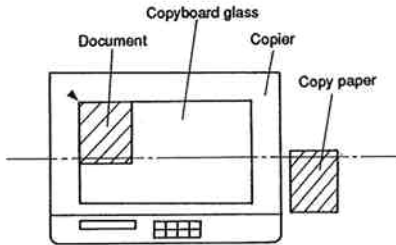


Figure 3-202 (top view; conventional machines)

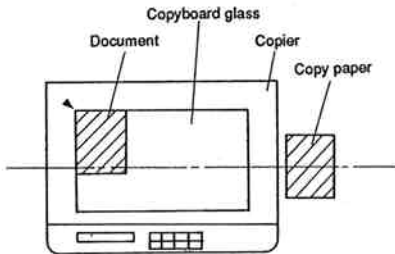


Figure 3-203 (top view; NP-6060)

Conventional machines pick up and feed copy paper in relation to the front side of the machine throughout the paper path, and this way of feeding is known as *front reference*.

In the NP-6060, on the other hand, paper is centered over its path as it is moved forward, and this way of feeding is called *center reference*.

2. Moving the Lens

As mentioned, the NP-6060 picks up and feeds copy paper using the center reference method, requiring a lens movement system not found in conventional machines.

With the front reference method, conventional machines need not move the lens to accommodate different paper widths as long as they are in the DIRECT mode; see Figure 3-204.

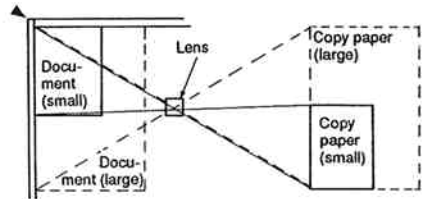


Figure 3-204 (conventional machines; DIRECT, different paper widths)

In the center reference method, as it is used in the 6060, the lens must be moved to match the edge of the document image with the edge of the copy paper for each different paper width even when making DIRECT copies; see Figure 3-205.

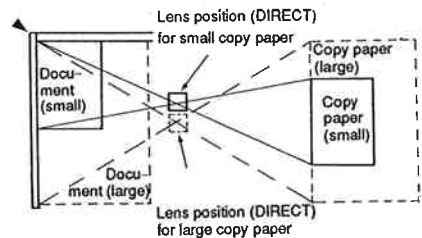


Figure 3-205 (NP-6060; DIRECT, different paper widths)

As can be seen, the lens moves lengthwise (y direction) for different paper widths even for the same reproduction ratio.

When the reproduction ratio is changed, the lens moves into the y direction to suit the width of the copy size, thereby establishing a lens path suited to the paper size; see Figures 3-207 and -208. The lens moves along this path to change the reproduction ratio across the drum.

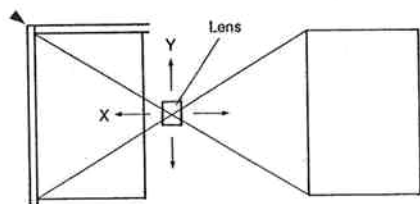


Figure 3-206

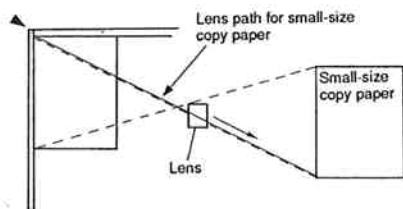


Figure 3-207 REDUCE

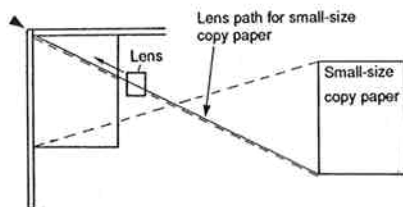


Figure 3-208 ENLARGE

3. Moving the Lens (outline)

a. Moving the Lens Lengthwise (y direction)

The machine's lens is fixed on a mobile lens mount, which moves the lens lengthwise (y direction).

The lens y motor (M10) is a stepping motor used to move the lens mount, and it serves to adapt the lens to the width of the copy paper.

b. Moving the Lens Breadthwise (x direction)

The lens fixed on the lens mount is moved by the lens x motor (M9). This motor is also a stepping motor, and it serves to move the lens breadthwise (x direction) to suit different reproduction ratios.

c. Focusing

Focusing is performed by a cam plate, which is part of the lens.

The lens is precisely focused as the cam plate is moved along the cam groove in the lens mount.

Note:

In the book mode, the document (book) is placed butted against the horizontal size index. If the RDF is used, the document is placed about 3 mm away from the horizontal size index plate when it is fed onto the copyboard class.

The fact necessitated conventional machines with an RDF to adjust the position of the cassette holder. The NP-6060, however, does not require such adjustment, as its lens is moved lengthwise (y direction) when making copies using an RDF.

d. At Power-On

When the machine is switched ON, the y motor (M10) and the x motor (M9) rotate, thereby moving the lens into the x and y directions. The y motor starts to rotate in reverse as soon as the signal plate attached to the lens mount blocks the lens home position sensor (Q3); the x motor rotates in reverse when the signal plate attached to the lens housing blocks the lens x home position sensor (Q2).

Both x and y motors stop when the lens has been moved to the DIRECT position to correspond to the location used for copying on LTR size paper.

The microprocessor (Q278; slave) remembers the position and, with reference to the position, sends drive pulses to the x and y motors to reposition the lens as necessary.

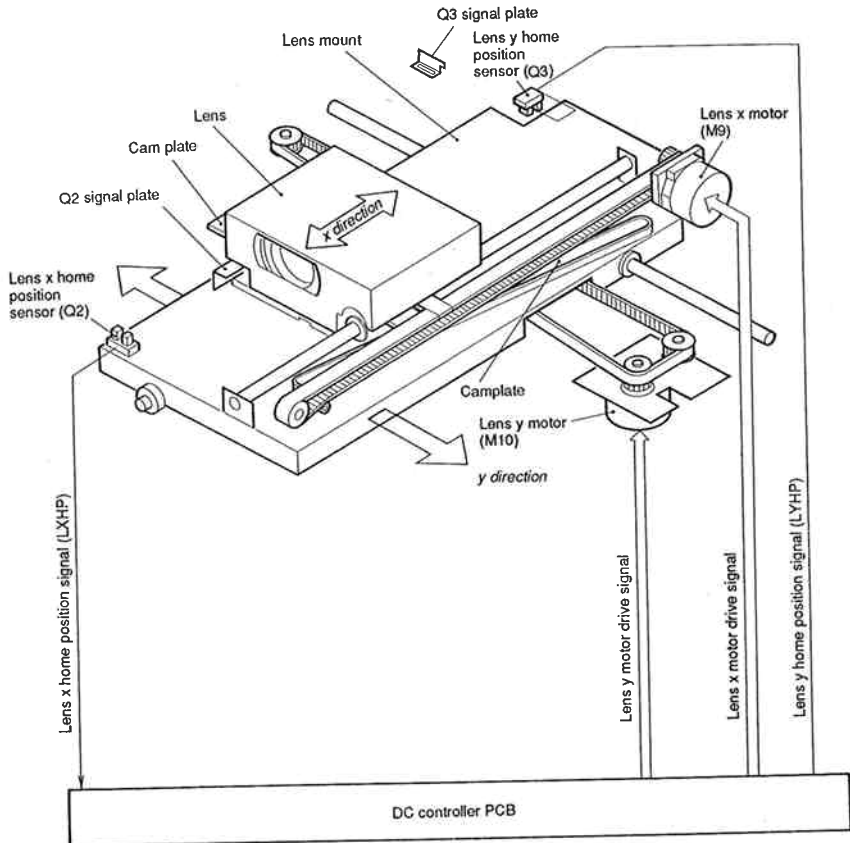


Figure 3-209

C. Scanner Drive System

1. Outline

The scanner is moved forward and in reverse by changing the direction of rotation of the scanner motor (M2).

The revolution of the scanner motor when the scanner is moving forward is varied depending on the reproduction ratio.

The revolution of the scanner motor when the scanner is moving in reverse is 3.6 times the speed at which the scanner moves forward regardless of the reproduction ratio.

The scanner is braked as soon as the signal plate reaches photointerrupter Q4; it is braked once again when the signal plate reaches photointerrupter Q5 so that it stops at the home position.

The distance over which the scanner moves is varied depending on the size of the copy paper and the reproduction ratio.

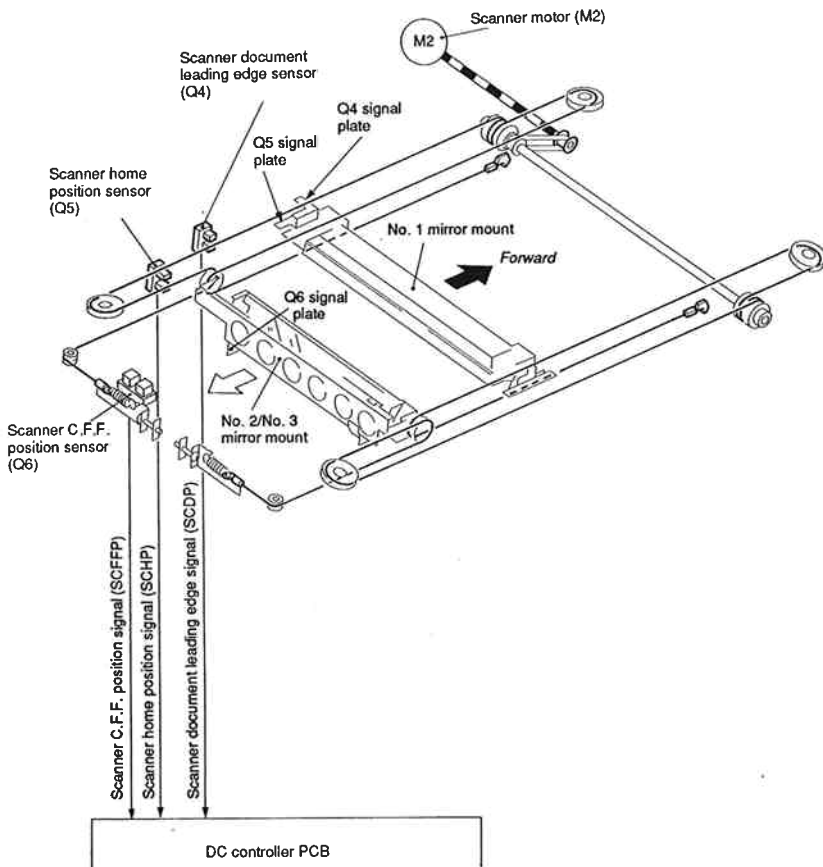


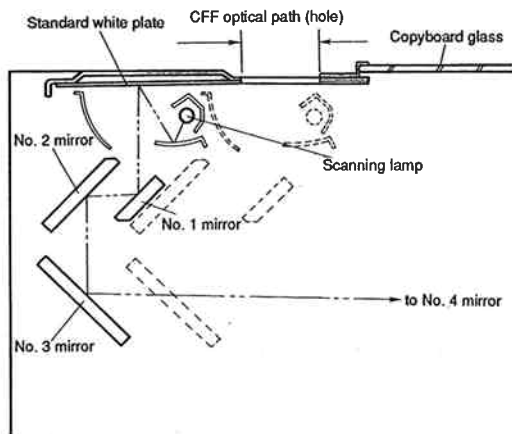
Figure 3-210

2. C.F.F. Position

When copies are made using the C.F.F. (option), the No. 1 through No. 3 mirrors are not used. Instead, the scanner is moved to the left of its

normal home position, and this position is called the *C.F.F. position*.

The C.F.F. position is checked by the scanner C.F.F. position sensor (Q6); see Figure 3-210.



The copyboard lamp and the No. 1 through No. 3 mirrors represented in dashed lines indicate the spatial relationship that occurs when the scanner uses its normal home position; the solid lines indicate the relationship that occurs when the scanner uses the C.F.F. home position.

Figure 3-211

3. Relationship Between Scanner Sensors and Signals

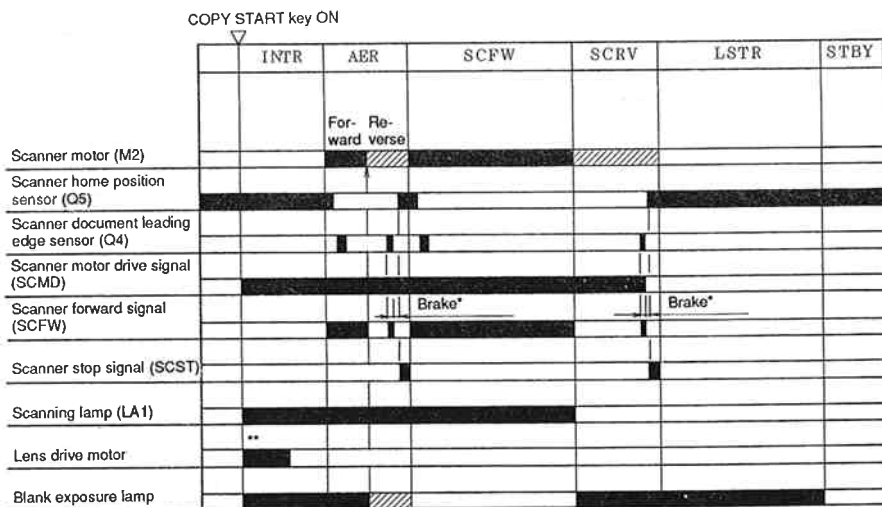
Sensor	Signal	Scanner		Description
		Forward	Reverse	
Q5	SCHP			• Scanner home position
				• Scanner stop brake ON
Q4	SCDP			• Registration clutch ON • Scanner forward distance reference
				• Scanner slow down brake ON
Q6	SCFFP			• Scanner C.F.F. position

Table 3-201

4. Sequence of Scanner Movements

The distance over which the scanner moves is determined by the microprocessor based on the size of copy paper, reproduction ratio, and copy mode.

The microprocessor, according to the selected reproduction ratio, computes how much of the document can be copied onto the copy paper and determines how far the scanner should be moved.



* May be varied in the service mode.

** Sets the lens to suit the selected reproduction ratio and the paper size.

Figure 3-212

5. Movement of Scanner (page separation mode)

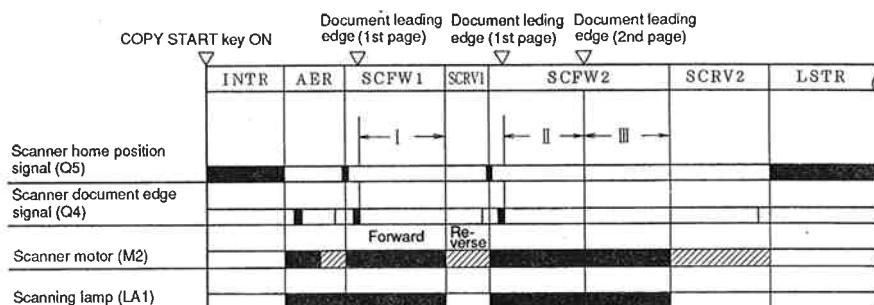


Figure 3-213

I, II, and III shown in Figure 3-213 represent control by the microprocessor on the DC controller PCB based on the scanner document leading edge signal for the first page (falling edge of SCDP).

The microprocessor, depending on the size of the document or the size of the cassette selected, determines the distance over which the scanner moves forward.

I,III: The distance over which the scanner moves is determined based on the reproduction ratio and the size of the document or the size of the cassette.

III: If document size identification has been performed, the microprocessor determines the center of the document using a measurement obtained by dividing the size of the document that has been identified.

The scanner is moved assuming this center as the leading edge of the second page.

If page separation is executed without document size identification, the control will be based on the size of the cassette.

If the distance II shown in Figure 3-213 exceeds 220 mm (approx.), the 220mm point will be assumed as the leading edge of the second page.

When the order of copying (first and second pages) is changed in the asterisk mode (p. 1-00), such changes will be limited to SCFW2/SCRV2 and SCFW1/SCRV1.

Note:

If two or more modes are selected, the scanner will be controlled based on the minimum measurement read of the document.

Table 3-202 gives the modes in which the microprocessor executes control based on the size of the document.

Mode	Reference
Feeder (RDF-A1)	Document size identified by feeder
Document FRAME ERASE	Document size set by user

Table 3-202

6. Scanner Motor Control Circuit

a. Outline

Figure 3-214 shows the circuit that controls the scanner motor, and the circuit has the following functions:

- ① Turns the scanner motor ON and OFF.
- ② Controls the direction of rotation of the scanner motor.
- ③ Controls the revolution of the scanner motor.

b. Stopping the Motor

When the scanner motor drive signal ($\overline{\text{SCMD}}$) goes '1', the drive circuit goes OFF, and the motor will not rotate.

c. Controlling the Forward Movement of the Scanner

When the scanner motor drive signal ($\overline{\text{SCMD}}$) goes '0' and the scanner forward signal (SCFW) goes '0', the drive circuit goes ON, and the scanner motor rotates forward, thereby moving the scanner forward.

d. Controlling the Reverse Movement of the Scanner

When the scanner motor drive signal ($\overline{\text{SCMD}}$) goes '0' and the scanner forward signal (SCFW) goes '1', the drive circuit goes ON, and the scanner motor rotates in reverse.

e. Controlling the Revolution of the Scanner Motor

The microprocessor on the DC controller PCB, according to the selected reproduction ratio, sends the scanner speed signal (SCS) to the scanner motor driver PCB.

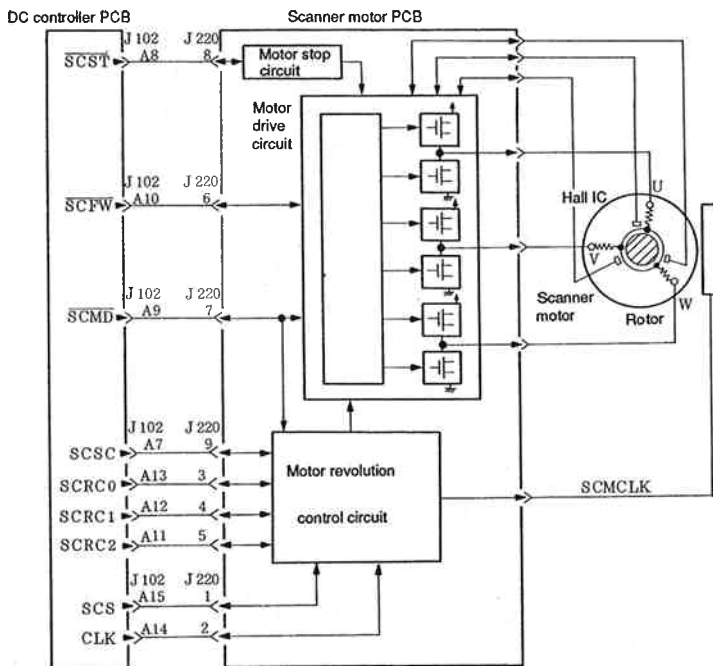


Figure 3-214

The revolution control circuit compares the scanner speed signal and the clock pulses (SCMCLK) generated by the scanner motor and sends control signals suited to the difference to the motor drive circuit.

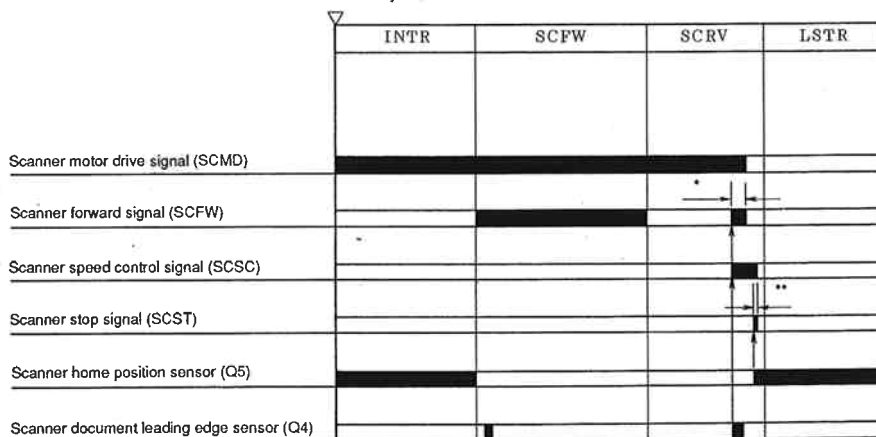
The motor drive circuit does not vary the voltage to the motor but turns the power ON and OFF at short intervals when controlling the revolution of the motor; in other words, the voltage remains the same.

The DC controller PCB generates the reproduction ratio selection signal (SCRC0, 1, 2; Table 3-203) to vary the revolution of the scanner motor to suit the reproduction ratio.

SCRC0	SCRC1	SCRC2	Main motor at high speed	Main motor at low speed	Overlay copy
0	0	0			200% to 170%
0	0	1	200% to 171%		169% to 139%
0	1	0	170% to 139%		138% to 113%
0	1	1	138% to 113%		112% to 92%
1	0	0	112% to 94%		91% to 77%
1	0	1	93% to 76%	63% to 62%	75% to 62%
1	1	0	75% to 64%	61% to 50%	61% to 50%
1	1	1	Scanner in reverse		

Table 3-203

COPY START key



* Scanner slow down brake.

** Scanner stop brake.

Figure 3-215

III. IMAGE FORMATION SYSTEM

A. Controlling the Drum Surface Potential

1. Outline

Changes occurring in the electrostatic latent image significantly affects the quality of copies. Some of the causes of such changes are as follows:

- ① Changes in the drum sensitivity.
- ② Changes in the degree of charging by the primary corona assembly.
- ③ Changes in the degree of exposure.

The above factors in turn are dependent on the environment (temperature, humidity) in which the machine is installed and the wear and dirt on the machine's components.

The NP-6060 is equipped with a drum surface potential control mechanism so that, even in the presence of these factors, stable latent images may be ensured.

The machine, further, varies the light area target potential (V_L), dark area potential (V_D), and control coefficient to enable reproduction of correct images.

Note:

The light area target potential, dark area target potential, and control coefficient must be set to the values shown on the sheet that comes with the drum. Set the values only after replacement of the drum.

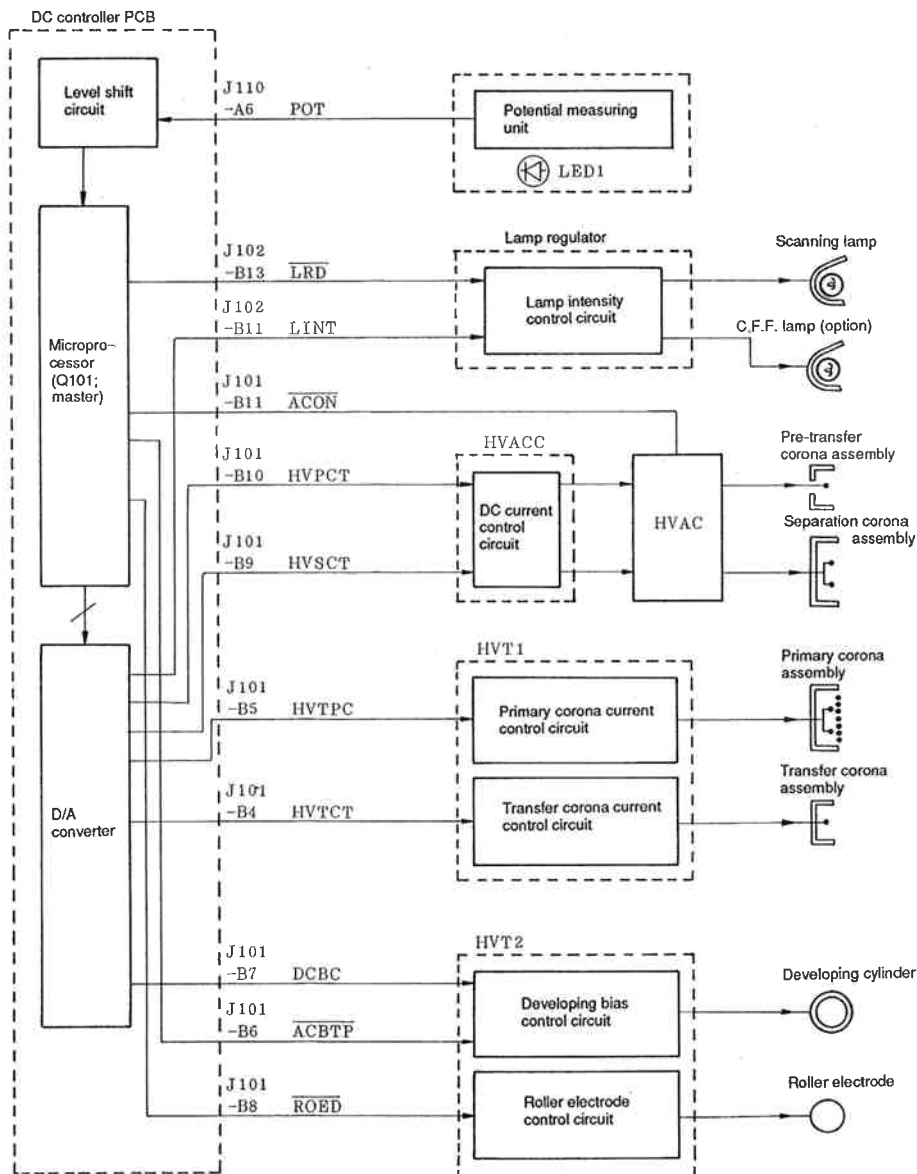


Figure 3-301

2. Control Method

Table 3-301 shows how many times the machine measures and corrects the potential.

	Measurement	Correction
V_D	4	4
V_{L1}	3	3
V_{L2}	1	0

Table 3-301

a. Primary Current Control

To measure the dark area potential (V_D), a reference current is sent to the primary corona assembly, and the drum surface potential is measured by the potential sensor. The DC controller PCB compares the measurement against the target value and, if there is a deviation, it corrects the primary corona level control signal (HVTPC) it generates.

The high-voltage transformer (HVT1) then sends adjusted current to the primary corona assembly.

This sequence of measurement and correction is repeated four times to bring the dark potential (V_D) closer to the target value.

b. Controlling the Scanning Lamp Intensity

To measure the light area potential (V_{L1}), a reference ON voltage is applied to the scanning lamp.

The scanning lamp exposes the standard white plate, and the reflected light is directed to the drum.

The potential of the area on the drum exposed to the reflected light is measured by the potential sensor, and the measurement is sent to the DC controller PCB. The DC controller in turn compares the measurement against the target value and, if there is a deviation from the target value, it corrects its intensity adjustment signal (LINT).

The lamp regulator then applies corrected voltage to the scanning lamp.

This sequence of measurement and correction is repeated three times to bring the light area potential (V_{L1}) closer to the target value.

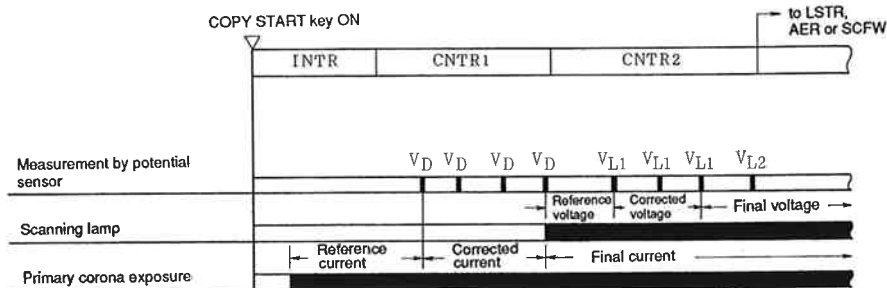


Figure 3-302

c. Controlling the Developing Bias

The light area potential for the developing bias (V_{L2}) is based on the drum surface potential occurring when the scanning lamp is turned ON using the value of the final intensity adjustment signal.

The measured potential is used by the DC controller PCB to control the developing bias DC level control signal (DCBC), thereby controlling the DC bias applied by the high-voltage transformer to the developing cylinder.

d. Executing Potential Control

The potential control rotation (CNTR1, 2) is not executed for each copy but when the conditions given in Table 3-302 are met. In the photo mode, however, the control is executed for the first copying operation for the mode after power-on.

The second and subsequent operations in the photo mode will be based on the measurements taken for the first and, therefore, the following table does not apply.

Reproduction ratio	power-on to 10 min or less	10 min to less than 60 min	60 min or more
64 to 200%	once for every power-on	once for first copy regardless of reproduction ratio	once for first copy regardless of reproduction ratio
50 to 63%	once for first copy regardless of reproduction ratio	once for first copy regardless of reproduction ratio	once for first copy regardless of reproduction ratio

Table 3-302 Timing for Potential Control

3. Potential Detection Circuit

Figure 3-304 shows a block diagram of the potential detection circuit.

A charge corresponding to the drum surface potential is induced around the electrode inside the sensor by an electric wire and, as the chopper opens and closes, the charge turns into an AC voltage and is sent to the the amplifier circuit inside the sensor; thereafter, the voltage is amplified and sent to the filter/gain adjustment circuit in the surface potential measuring circuit PCB.

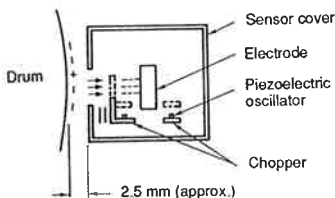


Figure 3-303 Cross Section of Sensor

The filter/gain adjusting circuit removes the electrical noise from the AC signal coming from the pre-amplifier circuit of the sensor, amplifies it further, and sends it to the sync clamp circuit through a photocoupler.

The sync clamp circuit combines the AC signal from the filter/gain adjusting circuit and decides whether the drum surface potential is positive or negative.

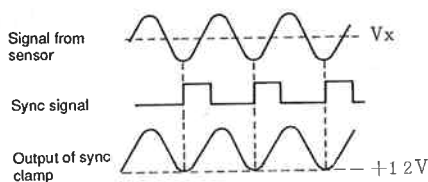


Figure 3-305 Surface Potential Higher Than Sensor Bias

Note:

'F' of F30V stands for floating, and the reference line of this power supply is not grounded, i.e., it is not 0 V.

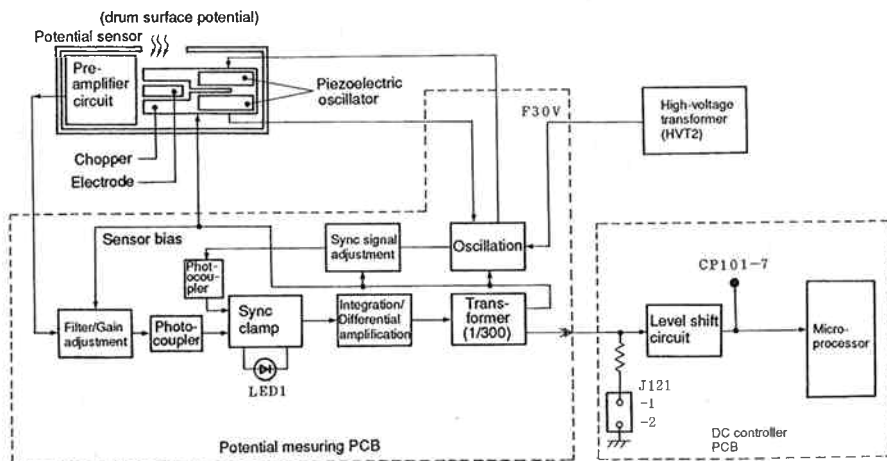


Figure 3-41

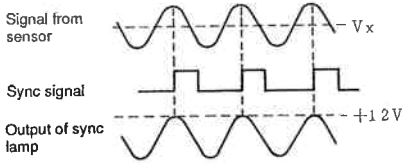


Figure 3-306 Surface Potential Lower Than Sensor Bias

The output of the sync clamp circuit is processed by the integration circuit and, after amplification, sent to the transformer. The output of the transformer varies between 0 and 600 V according to the signal and is sent to the sensor as a sensor bias while, at the same time, lowered to about 1/300 for the level shift circuit in the DC controller PCB.

The level shift circuit output signal (analog) is sent as is to the microprocessor on the DC controller PCB (Q278; slave).

a. Making Checks

① Referring to LED1

Normally, LED1 is ON while the main motor is rotating. If it fails to go ON normally, F30V power may be absent or the potential measuring unit may be faulty.

Note:

The potential sensor may be assumed to be in good condition as long as LED1 is lit normally.

② Using a Check Pin

Use J121-1 and J121-2 on the DC controller PCB to check the potential measuring unit; for details, see the SERVICE HANDBOOK.

Note:

- i. The sensor and the potential measuring PCB must be adjusted as a pair and with precision, not allowing adjustment in the field. These, therefore, are treated as a single part and called potential measuring unit.
- ii. The potential measuring PCB is equipped with variable resistors; do NOT adjust them in the field.

B. Controlling the Intensity of the Scanning Lamp

1. Outline

Figure 3-307 shows the circuit that controls the scanning lamp with the following functions:

- ① Turns the scanning lamp ON and OFF.
- ② Controls the intensity of the scanning lamp.
 - Maintains the intensity against voltage fluctuations.
 - Controls the intensity to suit the shifts in the sensitivity of the drum.
 - Controls the intensity to suit the settings of the COPY-DENSITY key.
 - Controls the intensity to suit the density of the document (AE).
 - Controls the supply voltage to the scanning lamp to 0.975 for reductions of 60% or less.
- ③ Checks the activation of the scanning lamp.
- ④ Switches the lamps.

2. Mechanism

a. Turning the Scanning Lamp ON and OFF

If $\overline{\text{LRD}}$ (lamp regulator drive signal) is '1', the output of the lamp regulator switching circuit goes '0', depriving the phase control circuit of power; the condition causes the triac-triggering circuit to go OFF, thereby causing the scanning lamp to go OFF.

If $\overline{\text{LRD}}$ is '0', the output of the lamp regulator switching circuit goes '1', supplying the phase control circuit with 24V power; the condition causes the triac-triggering circuit to go ON, thereby causing the scanning lamp to go ON.

b. Controlling the Intensity of the Scanning Lamp

The intensity of the scanning lamp is increased or decreased by controlling the power sent to the scanning lamp according to the value of the intensity adjustment signal (LINT) coming from the DC controller PCB.

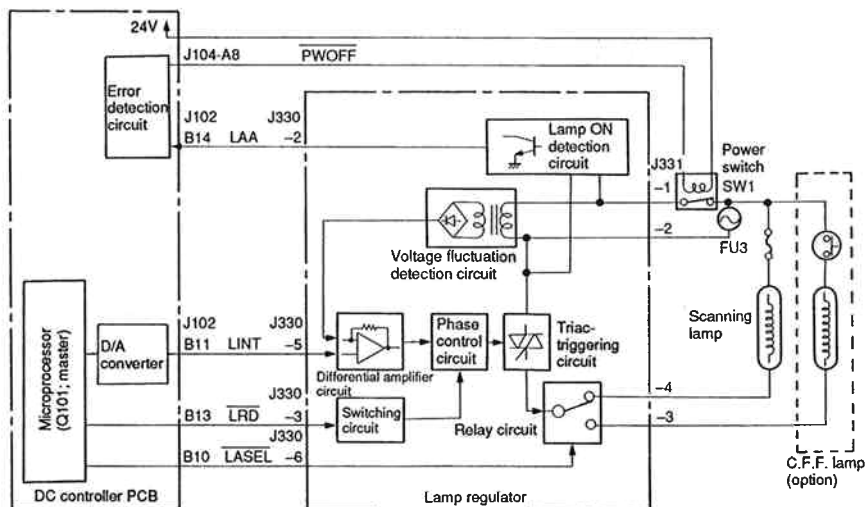


Figure 3-307

The LINT signal varies according to the setting of the COPY DENSITY key, density of the document, sensitivity of the drum, and setting of the intensity control VR; it executes phase control so that the supply voltage to the scanning lamp varies between 45 and 80 V in terms of actual values.

When reductions of 60% or less are used, the voltage applied to the scanning lamp is lowered to 0.975 to lower the intensity of the light directed to the surface of the drum.

In the photo mode, on the other hand, the voltage applied to the scanning lamp is lowered 5 V from the normal copying voltage, thereby lowering the intensity of the light directed to the surface of the drum.

③ Checking the Activation of the Scanning Lamp

The ON detection circuit outputs the ON detection signal (LAA=1) as long as the scanning lamp or the C.F.F. lamp (option) is ON. The LAA signal is input to the error detection circuit of the DC controller PCB. If the scanning lamp goes ON without the lamp ON signal (LRD) because of a short in the ON circuit or for some other reason, the relay in the power switch (SW1) becomes activated, causing the power switch to go OFF, thereby depriving the lamp regulator of AC power.

The ON detection circuit is found in the lamp regulator also monitors the activation of the fixing heater at the same time; for details, see p. 3-107.

④ Switching the Lamps

The AC power supplied to the option C.F.F. lamp comes from the lamp regulator.

If the lamp switching signal (LASEL) coming from the DC controller PCB is '0', the AC power is supplied to the scanning lamp and if '1', the AC power is supplied to the C.F.F. lamp. This switching mechanism is limited to when LRD is '1' (lamp OFF), and is executed automatically when the C.F.F. is used.

3. Automatic Exposure Control (AE)

The machine is equipped with an automatic exposure control mechanism, which automatically controls the intensity of the scanning lamp according to the density of the document.

Using the AE (automatic exposure) mode, copies may be made without relying on manual density adjustment and without worrying about fogging. The intensity of the scanning lamp controlled in the AE mode is displayed on the copy density window of the control panel.

The AE mode may be made use of in the machine or in the RDF; if a document is set in the RDF, the AE mode of the RDF will be used.

① AE Mode in the Copier (CMAE)

The scanning lamp is turned ON during AE rotation (AER), and the scanner is moved forward for a length of 120 mm; when the scanner is moving in reverse, the surface potential of the four points shown in Figure 3-308 is measured and the measurements are sent to the DC controller PCB.

The DC controller PCB computes the average of the measurements (surface potential) and decides the intensity of the lamp to be used for copying operations.

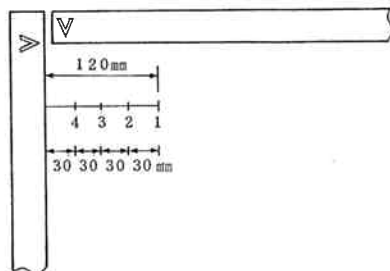


Figure 3-308

② AE Mode in the RDF (RFAE)

The density of the document is measured while the RDF picks up and feeds the document.

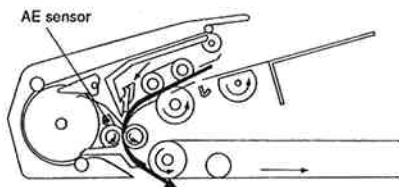


Figure 3-309

The five points shown in Figure 3-310 are measured by the RDF, and the measurements are sent to the copier's DC controller PCB. The DC controller PCB, based on the measurements, decides the intensity of the scanning lamp for copying operation.

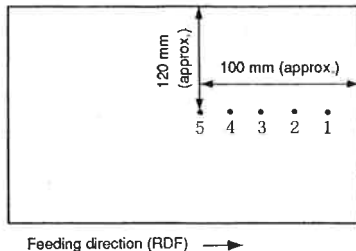


Figure 3-310 Points of Measurement

Figure 3-311 shows the variation in the intensity of the scanning lamp in relation to the density of the document. If the density of the document is lower than that of the Test Sheet yet higher than that of a newspaper, the intensity varies between F5 and F9 (copy density notation). If the document is lighter than the Test Sheet, the intensity will be an F5 equivalent and if darker than a newspaper, an F9 equivalent.

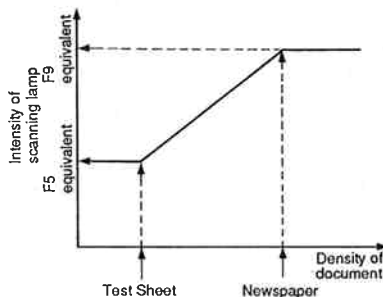


Figure 3-311

4. Points to Check

① Checking the Voltage of J102-B11 (LINT)

Make sure that, when the voltage between J102-B11 and J102-B12 (GND) on the DC controller is about 10 to 16 V during copying operation with the COPY DENSITY key set to *darker*, the measurement is lower; when the setting is to *lighter*, on the other hand, the measurement is higher.

② Checking the Voltage of J102-B13 (LRD)

Make sure that the voltage between J102-B13 and J102-B12 (GND) on the DC controller PCB is about 24 V when the scanner is moving forward and is about 0 V during initial rotation, when the scanner is moving in reverse, and during last rotation.

e. Intensity/AE Adjustment

Table 3-303 discusses items that can be adjusted by the scanning lamp intensity control circuit.

Service mode	Function	Adjustment	Remarks
* 3 * LIGHT-5L LIGHT-5H LIGHT5PL LIGHT5PH CFFLIGHT	Optimum exposure adjustment at time of potential control (copy density 5)		① If the setting is increased in the service mode, the intensity during copying operation increases, thereby lowering the copy density. ② If the setting is decreased in the service mode, the intensity during copying operation decreases, thereby raising the copy density.
* 3 * GLEAM-5L GLEAM-5H CFFGLEAM	Optimum exposure adjustment at time of non-potential control (copy density 5)		① If the setting is increased in the service mode, the intensity during copying operation increases, thereby lowering the copy density. ② If the setting is decreased in the service mode, the intensity during copying operation decreases, thereby raising the copy density.
* 3 * AE-SLOP CFFAESLP	AE slope		① If the setting is increased in the adjustment mode, newspaper copies will be darker. ② If the setting is decreased in the adjustment mode, newspaper copies will be lighter.

Table 3-303

C. Controlling the Blank Exposure Lamp (LED)

1. Outline

The blank exposure lamp consists of an array of 124 LEDs.

All of the 124 LEDs of the blank exposure lamp go ON except when the document is exposed, potential is controlled, or AE measurements are taken while the drum is rotating to prevent adhesion of excess toner on the drum.

The two LEDs each at the rear and the front are kept ON at all times while the drum is rotating.

2. Control for Reduced Copies

When the document is exposed for reduced copies, the LEDs (rear) in numbers proportional to the reduction ratio are turned ON, thereby blanking out the non-image area. The LEDs at the front are also turned ON to suit the size of the copy paper.

3. Control for DIRECT Copies

When the document is exposed for DIRECT copies, the LEDs at both rear and front are turned ON in numbers proportional to the size of the copy paper, thereby blanking out the non-image area.

If a fixed reproduction ratio is selected or copy paper of a standard size is used in DIRECT, a non-image width is created at both rear and front of the image; this is called standard frame erasing.

This width may be changed to 0 mm in the service mode.

4. Control for Sheet/Document Erasing Mode

When the sheet frame erasing mode is selected, an appropriate number of LEDs are turned ON to prevent adhesion of toner along the sides of the copy paper (about 7 mm wide).

Note:

When the multifeeper is used, the copy size may be specified; if specified, erasing is executed to suit the specified size and if not specified (free), the mechanism uses the maximum size (297 x 432 mm).

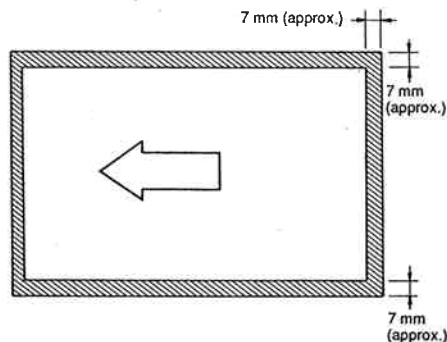


Figure 3-312

In the document frame erasing mode, an appropriate number of LEDs are turned on so that a width of about 2 mm corresponding to the sides of the document will be free of toner.

Document size	Non-image width
A4R, B5R, B4, A3, LTR-R	2.75 ± 2.3 mm
Others	3.0 ± 2.55 mm

Table 3-304

5. Control for AE

In the AE mode, the surface potential of the drum is measured so that the blank exposure lamp must be OFF.

Since areas in which the surface potential is measured are limited, the LEDs of the blank exposure lamp corresponding to these areas are turned OFF and those others are left ON.

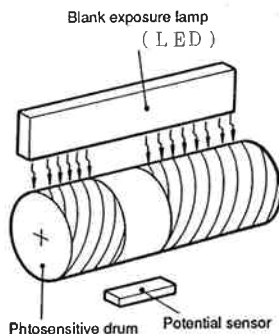


Figure 3-313

D. Controlling the Primary/ Transfer Corona Current

1. Outline

Figure 3-314 shows the circuit that controls the primary/transfer corona with the following functions:

- ① Turns the primary corona current ON and OFF.
- ② Maintains the primary corona current.
- ③ Turns the transfer corona current ON and OFF.
- ④ Switching the transfer corona current.

2. Controlling the Primary Corona Current

The DC controller PCB compares the drum surface potential (VD) obtained by the potential detection circuit against the target potential and, if there is a deviation, corrects the signal for primary corona current control generated by the DC controller. The corrected signal is converted to an analog signal (HVTPC) by the D/A converter circuit and sent to the high-voltage transformer, thereby controlling the primary corona current.

The primary corona current is turned ON or OFF by the HVTPC signal.

If the HVTPC signal is about 8 V or more and less than 16 V, the output of the primary corona current goes ON; it goes OFF when the voltage is about 16 V or more.

If the high-voltage transformer (HVT1) is supplied with 24Vr (DC power), LED1 goes ON; the switching circuit remains ON at all times.

a. Corona Current Output for Primary OFF

HVTPC is about 16 V.

- Differential amplifier circuit is OFF.
- High-voltage for primary is OFF.
- LED3 is OFF.

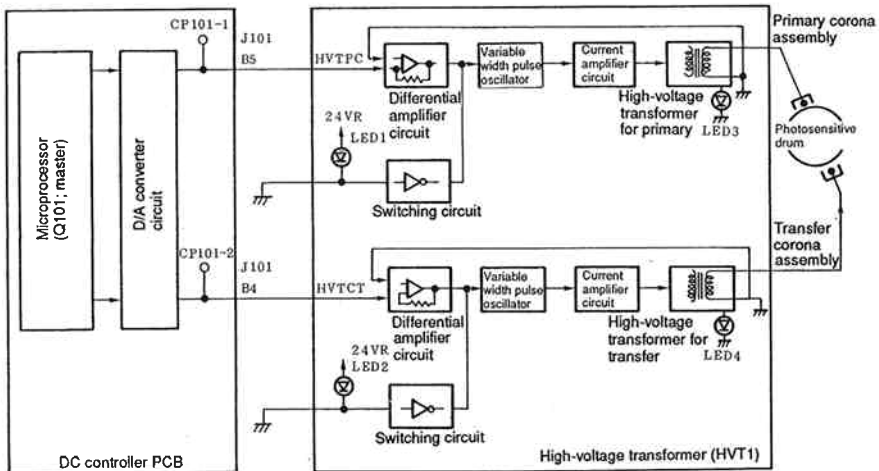


Figure 3-314

b. Corona Current Output for Primary ON

HVTPC is about less than 16 V.

- ↳ Differential amplifier circuit is ON.
- ↳ High-voltage for primary is ON.
- ↳ LED3 is ON.

In this condition, the high-voltage transformer sends a high voltage suited to the output value of the primary corona level control signal (HVTPC) to the primary corona assembly.

If an excess corona current flows from the primary corona assembly because of changes in the environment, the feedback signal to the differential amplifier circuit rises and the output lowers, thereby lowering the corona current from the primary corona assembly and maintaining a constant current value.

In the photo mode, the target value is about 80 V lower than the dark area potential (VD) of the normally copy mode. For this reason, during the first copying operation in the photo mode after power-on, the machine executes potential control to determine the primary corona current.

Controlling the Transfer Corona Current

Changes in the environment (temperature, humidity) are major factors that affect the efficiency of toner transfer from the photosensitive drum to the copy paper.

Since the current control mechanism controls the charge from the transfer corona assembly, there will always be a constant amount of charge, ensuring uniform images throughout copies.

Despite the mechanism, however, extreme changes in the environment can sometimes make the overall density of the copies too high or too low.

To limit these changes in the density otherwise caused by changes in the environment, the inside temperature of the machine is monitored, and the transfer current varied accordingly.

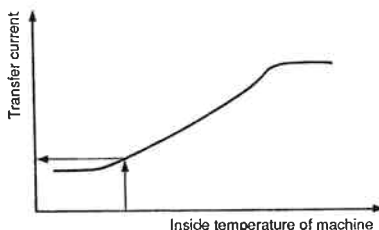


Figure 3-315

The output of the transfer corona current is turned ON and OFF by the transfer corona level control signal (HVTCT).

If the HVTCT signal is about 14 V or more or less than 16 V, the output of the transfer corona goes ON; it goes OFF when the voltage is about 16 V or more.

LED2 remains lit as long as the high-voltage transformer (HVT1) is supplied with 24 VR power (DC); the switching circuit, on the other hand, remains ON at all times.

a. Transfer Corona Current Output Off

HVTCT is about 16 V.

- ↳ Differential amplifier circuit is OFF.
- ↳ High-voltage for transfer is OFF.
- ↳ LED4 is OFF.

b. Transfer Corona Current Output ON

HVTCT is about 14 to 16 V or less.

- ↳ Differential amplifier for transfer is ON.
- ↳ High-voltage transformer for transfer is ON.
- ↳ LED4 is ON.

In this condition, the high-voltage transformer sends a high voltage suited to the output of the transfer corona level control signal (HVTTC) to the transfer corona assembly.

If an excessive corona current flows from the transfer corona assembly because of changes in the environment, the feedback signal to the differential amplifier circuit rises and the output lowers, thereby decreasing the corona current and maintaining a constant current.

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Controlling the Separation/ Pre-Transfer Corona Cur- rent

1. Outline

Figure 3-316 shows the circuit that controls the separation corona current and the pre-transfer corona current, and the circuit has the following functions:

- ① Turns the separation/pre-transfer corona current ON and OFF.
- ② Switches the separation corona current values.
- ③ Maintains the separation corona current.
- ④ Switches the pre-transfer corona current values.
- ⑤ Maintains the pre-transfer corona current.

The DC component of the separation corona assembly and the pre-transfer corona assembly is controlled so that it is free of effects of the changes in the corona discharge caused by changes in the environment; this is based on the sample signals from the secondary side of the high-voltage transformer, and the AC transformer is controlled to a constant voltage.

To limit the effects of the environment, further, the temperature inside the machine and the surface potential of the drum during copying operation are measured, and the measurements are used to vary the separation corona current accordingly.

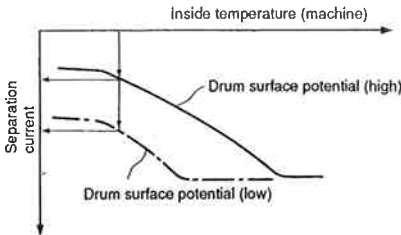


Figure 3-316

Further, the temperature inside the machine is measured to vary the pre-transfer corona current.

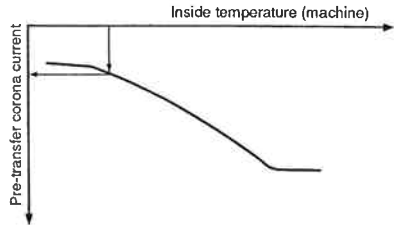


Figure 3-317

2. Turning the Separation/Pre-Transfer Corona Current ON and OFF

The separation/pre-transfer corona current is turned ON and OFF by the HVAC drive signal (ACON).

If ACON is '0', corona current (AC component/DC component) is applied to the separation/pre-transfer corona wire.

3. Controlling the Separation Corona Current (DC component)

The DC current values for the separation corona is executed by the separation corona level control signal (HVSCT) generated by the DC controller PCB. the DC current of the separation corona current varies to suit the voltage level of the HVSCT signal.

4. Controlling the Pre-Transfer Corona Current (DC component)

The DC current values for the pre-transfer corona level control signal (HVPCT) generated by the DC controller PCB. The DC current of the pre-transfer corona current varies to suit the voltage level of the HVPCT signal.

5. Controlling the Overcurrent for the Separation/Pre-Transfer Corona Current (DC component)

If an overcurrent flows into the separation/pre-transfer corona assembly, the HVACC PCB sends the high-voltage transformer stop signal (HVOFF) to the HVAC PCB, and the limiter circuit on the HVACC PCB temporarily cuts off the corona current (DC/AC) applied to the separation/pre-transfer corona assembly.

Even after the HVOFF signal has been generated, the machine remains in operation, so that the application of the corona current will be resumed as soon as the application current returns to a normal value.

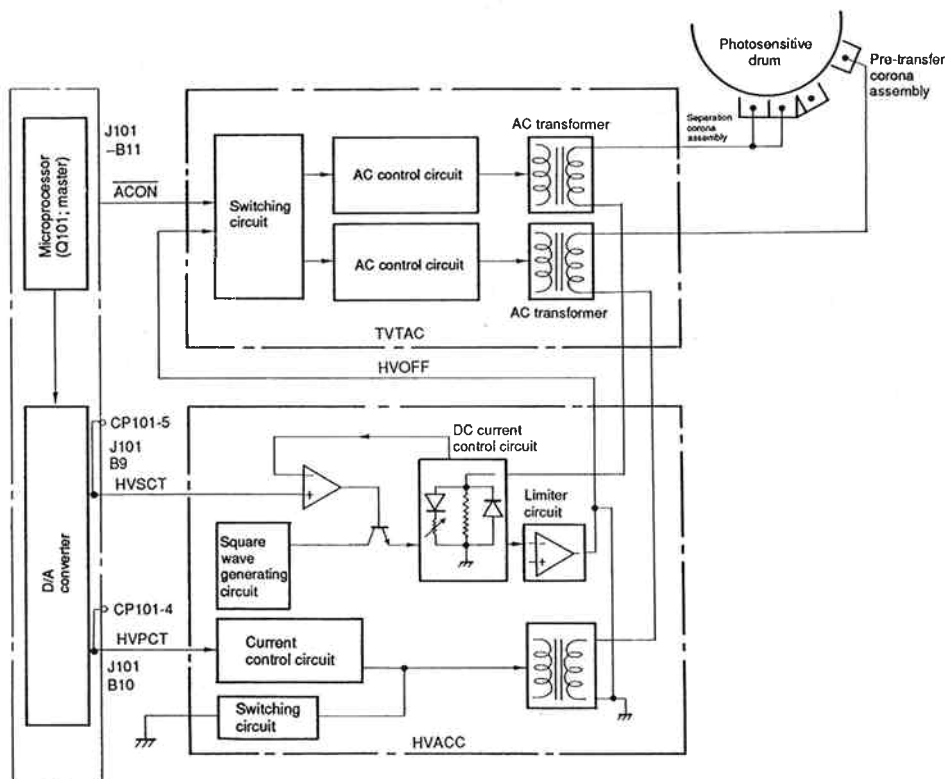


Figure 3-318

If an overcurrent flows and the HVOFF signal continues to be generated because of leakage caused by a broken corona wire, the application will not be resumed unless the cause of the problem is removed.

Note:

If the corona current applied to the separation/pre-transfer corona assembly is cut off because of an overcurrent, separation jams will be frequent.

Since no warning is displayed on the control panel under the condition, it is important to check the related mechanisms if separation jams seem frequent.

F. Developing Assembly and Cleaning Assembly

1. Outline

The developing assembly is driven by engaging and disengaging the developing clutch (CL1), thereby cutting on and off the drive from the main motor.

The cleaning assembly is driven by the main motor through drum gears.

The level of toner inside the developing assembly is checked by the toner level detection circuit and, if the toner falls below a specific level, a supply of toner is sent from the hopper unit.

The level of toner inside the hopper unit is checked by the toner sensor (Q31) and, if the toner falls below a specific level, the ADD TONER message is displayed on the control panel.

The hopper motor (M12/13) is used to carry toner from the hopper unit to the developing assembly.

The toner scraped by the cleaning blade is sent by the feedscrew inside the cleaning assembly to the rear of the machine. The toner then moves through the waste toner feedpipe for collection in the waste toner receptacle, but no special mechanism is provided to check the amount of toner collected in the receptacle.

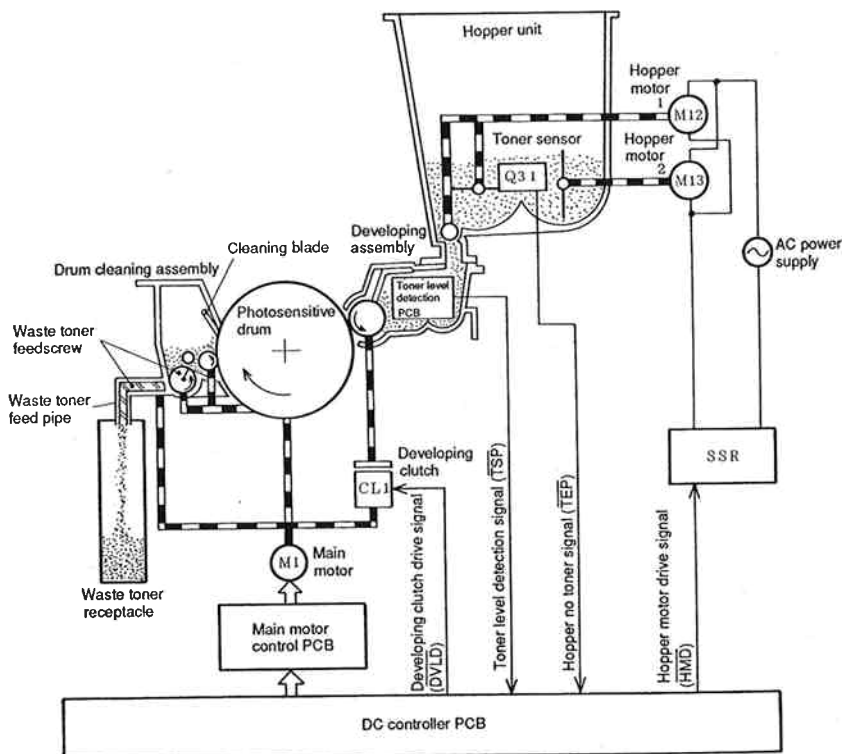


Figure 3-319

2. Controlling the Toner Level

a. Checking the Level of Toner Inside the Developing Assembly

The developing assembly is equipped with two sensors; one for reference, and the other for toner level.

An AC bias is applied to the developing cylinder and the blade mount and, therefore, an electro-magnetic field develops around them.

The reference sensor is attached opposite the blade mount and generates a specific voltage at all times regardless of the level of toner.

The electromagnetic field around the developing cylinder reaches the toner level sensor through toner. The foregoing arrangement causes the output of the toner level sensor to vary according to the level of toner.

The level of toner is checked by comparing the outputs of these two sensors.

- ① The following occurs when there is a sufficient amount of toner in the developing assembly:
Toner is present around the toner level sensor; therefore, the voltage of the output from the sensor will be equal to the voltage of the output from the reference sensor.

For this reason, the output from the comparator circuit will go '0', thereby causing the black toner supply signal (TSP) to go '1'.

- ② The following occurs when there is an insufficient amount of toner in the developing assembly:

When the toner around the toner level sensor decreases, the voltage of the output from the sensor lowers.

The output from the reference sensor, on the other hand, remains the same, and the output voltage remains high.

The difference in these voltages causes the output from the comparator circuit to go '1', and the black toner supply signal (TSP) to go '0'.

This condition causes the microprocessor to activate the hopper motor, thereby supplying the developing assembly with toner.

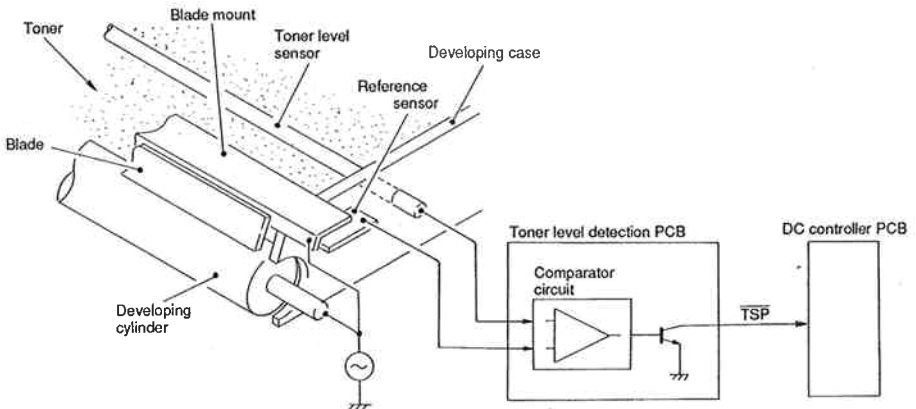


Figure 3-320

b. Checking the Level of Toner in the Hopper Assembly

The window on the toner sensor used in the hopper unit is a piezoelectric oscillator which, in the absence of toner, oscillates at several kHz, causing the output of the sensor to go '0'. When toner is present, the oscillator does not oscillate so that the output of the sensor will be '1'.

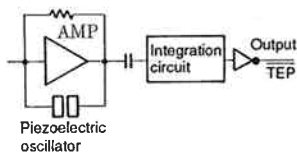


Figure 3-321

If the toner sensor fails to detect the absence of toner inside the hopper unit, the ADD TONER message will be displayed on the control panel after the copying operation is over.

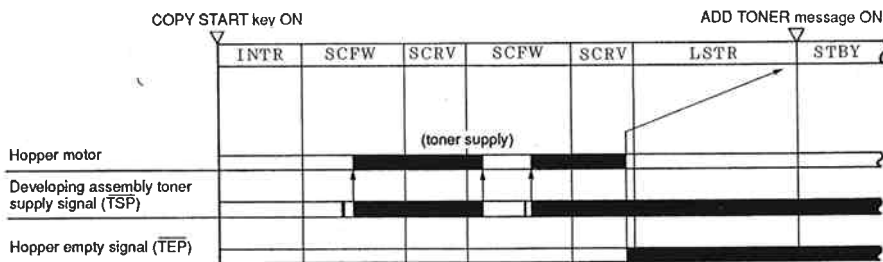


Figure 3-322

3. Controlling the Developing Bias and the Roller Electrode

a. Outline

During copying operation, AC and DC biases are applied to the developing cylinder. The DC bias consists of a voltage obtained by addition of 130 V to the measurement (V_{L2}) taken by the potential sensor before the copying operation.

When copying operation is not under way, the value of the DC bias is varied to suit the surface potential of the drum to prevent adhesion of excess toner on the photosensitive drum.

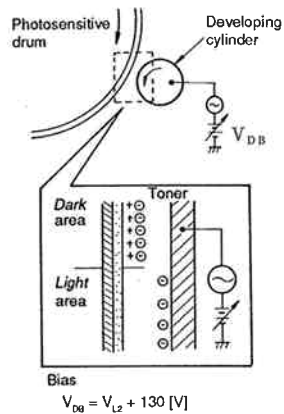
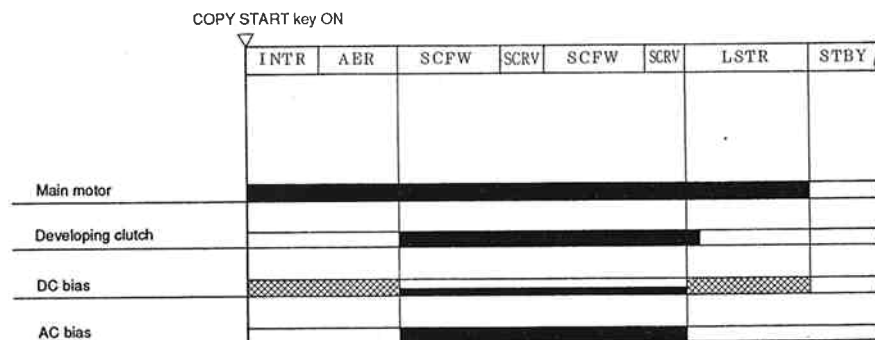
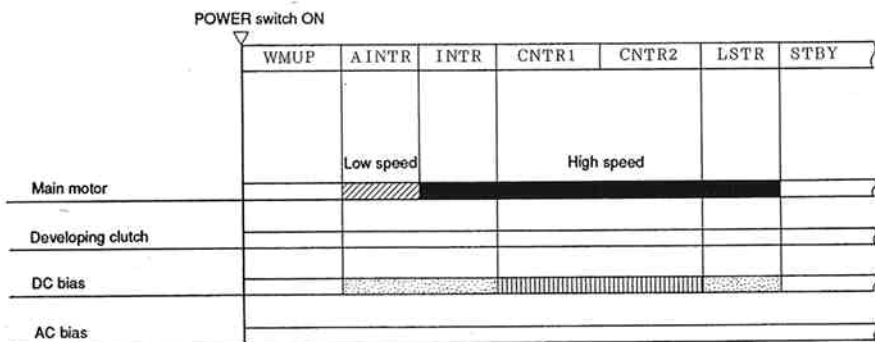


Figure 3-323

b. Control Timing

Bias	Voltage	Period	Description
DC component	+ 300 V	AINTR, INTR, LSTR	To prevent adhesion of excessive toner to the drum.
	Potential measured + 200 V	CNTR1, 2	To prevent adhesion of excess toner to the drum; as the surface potential constantly changes, the potential sensor measures the potential at all times.
	+600 V	INTR, AER, and LSTR during copying operation	To prevent adhesion of excess toner to the drum.
	$V_{L2} + [130 \text{ V}]$ ($V_{L2} + 110 \text{ V}$ when C.F.F. in use)	SCFW and SCRIV during copying operation	To prevent fogging over white areas.
AC component	1400 Vp-p, 2200 Hz		Execute projection development.

Table 3-304



DC bias :  : + 300V

 : Potential measured + 200 V

 : + 600V

 : VL2 + 130V (normal copying)

Figure 3-324

c. Developing Bias Control Circuit

The circuit that controls the developing bias has the following functions:

- (1) Turns the AC bias ON and OFF.
- (2) Turns the DC bias ON and OFF

① Turning the AC bias OFF

ACBTP is 1.

→ AC bias switching circuit is ON.

→ High-voltage AC transformer output OFF.

The above cuts off the AC bias to the developing cylinder.

② Turning the AC bias ON

ACBTP is 0.

→ AC bias switching circuit is OFF.

In the above condition, the output of the square wave generating circuit is amplified by the current amplifier circuit and then raised by the high-voltage AC transformer to 1400 Vp-p; thereafter, it is sent to the developing cylinder.

③ Controlling the Voltage Level of the DC Bias

The voltage of the DC bias is determined by the value of the signal (DCBC) coming from the DC controller PCB. When the output (DCBC) of the DC controller increases, the voltage of the DC bias will increase accordingly.

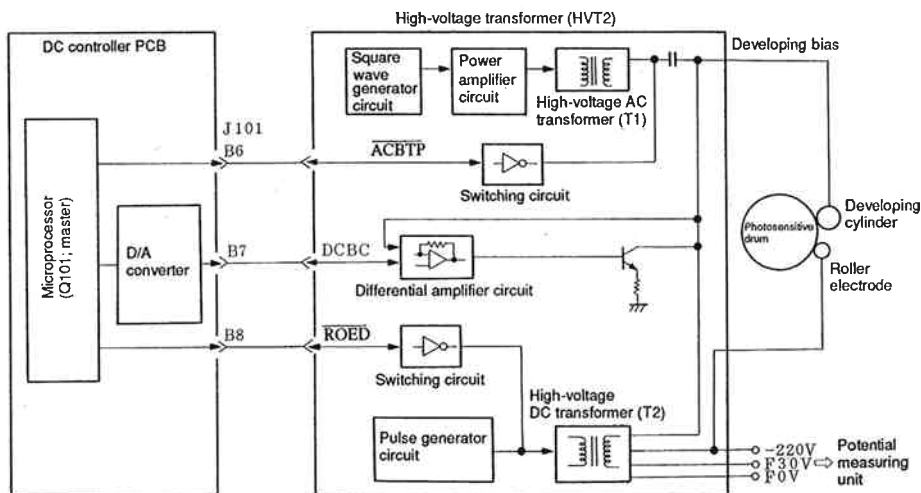


Figure 3-325

d. Roller Electrode Bias Control Circuit

The circuit that controls the roller electrode bias has the following functions:

- (1) Turns the roller electrode ON and OFF.
- (2) Supplies the surface potential measuring PCB with power.

① Turning the Roller Electrode Bias OFF

- ROED (roller electrode drive signal) is '1',
i.e., the registration roller is at rest.
- Switching circuit is ON.
- Pulse oscillator circuit is OFF.
- High-voltage DC transformer is OFF.

The above condition deprives the roller electrode of the bias; moreover, the potential measuring circuit will also be deprived of power.

② Turning the Roller Electrode Bias ON

- ROED (roller electrode drive signal) is '0',
i.e., the registration roller is rotating.
- Switching circuit is OFF.
- Pulse oscillator circuit is ON.
- High-voltage DC transformer is ON.

The above condition supplies the roller electrode with a bias of about -1000 V. At the same time, the potential measuring PCB will be supplied with power and go ON.

4. Checking for the Locking of the Waste Toner Feedscrew

If the toner has caked inside the waste toner pipe for some reason and hinders the rotation of the waste toner feedscrew, the toner can overflow the pipe and leak outside the pipe.

To protect against such a problem, a mechanism is provided to check for locking of the feedscrew.

If the feedscrew locks, gear A used to drive the waste toner feedscrew receives the axial force and slides along the shaft. This movement of gear A is monitored by the waste toner switch (SW20); see Figure 3-326.

When SW20 is pushed against gear A, the main motor (M1) stops, and 'E013' will be indicated on the control panel.

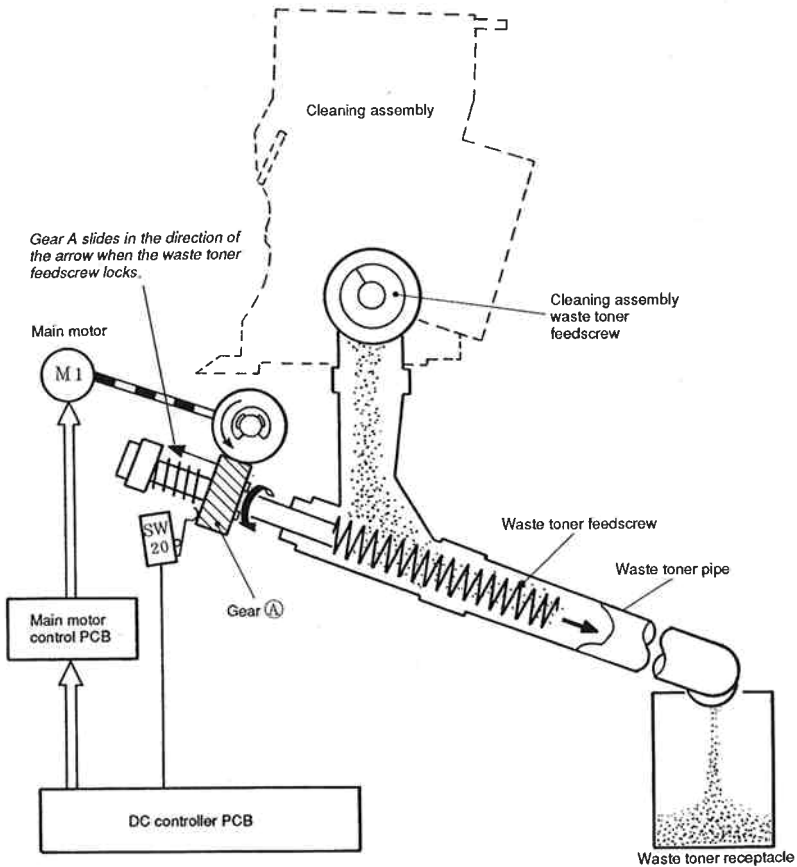


Figure 3-326 (rear view)

5. 1/2-Rotation of Developing Sleeve

The developing sleeve is located next to the surface of the photosensitive drum; and, for this reason, the heat of the drum heater can cause uneven deposits of toner on the sleeve.

To prevent the effects of the drum heater, you can activate 1/2 rotation control for the developing sleeve in service mode ([*][5][*]). See table 3-306.

In 1/2 rotation control, the main motor and the

developing clutch are caused once to go ON if no operation is executed for five minutes after the copier enters standby, thereby turning the developing sleeve for a 1/2 rotation.

If the COPY START key is pressed within two minutes or more after the 1/2 rotation, the developing sleeve makes another 1/2 rotation; copying operation starts after an additional two or five seconds (approx.).

Service Mode ([*][5][*])		Sequence of operations
Item	Setting	
DEV_ROT	0	• Sleeve 1/2 Rotation OFF
	1	• Sleeve 1/2 Rotation ON
	2	• Sleeve 1/2 Rotation ON

Table 3-306



G. Drum Heater Control Circuit

The drum heater (80 W) is attached to the inside of the photosensitive drum and controls the heater so that the surface temperature of the drum is always constant.

The AC power supplied to the drum heater comes through the SSR; half-wave AC power is supplied when an drum heater drive circuit inside the SSR is OFF, and full-wave AC power is supplied when ON.

The drum heater drive circuit is turned ON and OFF by the drum heater drive signal ($\overline{\text{DHRD}}$) coming from the DC controller.

Table 3-305 shows the relationship between the conditions of the machine and the state of the drum heater drive circuit in the SSR.

Condition of machine	State of drum heater drive circuit (SSR)
Power plug is connected and Power switch is OFF	OFF (supplies half-wave AC power)
During copying operation	
At standby	ON (supplies full-wave AC power)

Table 3-305

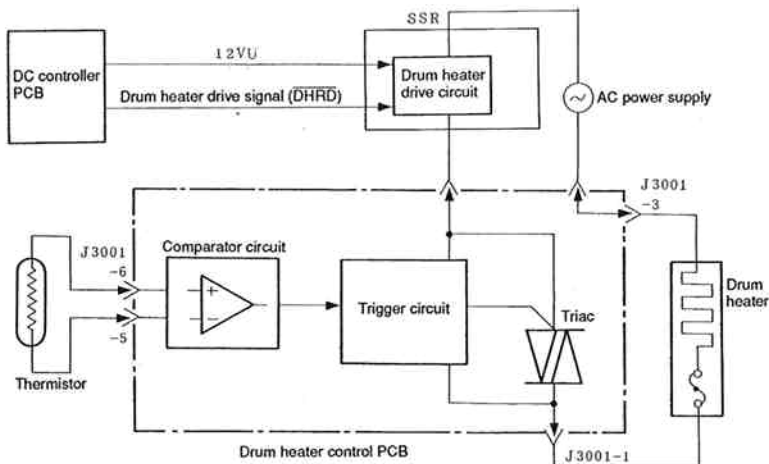


Figure 3-327

The temperature of the drum is monitored at all times by the thermistor built into the drum heater.

If the temperature of the drum drops below a specific value, the output of the comparator circuit goes '1', causing the trigger circuit to go ON; this condition causes the triac to go ON, causing the drum heater to go ON.

If the temperature of the drum is higher than a specific value, the output of the comparator circuit goes '0', causing the drum heater to go OFF.

drum surface temperature control value: 42°C (107°F)

thermal fuse rated temperature: 76°C (168.8°F)

H. Controlling the Cleaning of the Corona Wire

1. Outline

The machine has automatic cleaning mechanisms for the primary corona wire, pre-transfer corona wire, separation corona wire, and transfer corona wire.

These automatic cleaning mechanisms are activated under the following conditions:

- ① The temperature of the fixing assembly is 160°C or less when the machine is switched ON.
- ② When the corona wire is cleaned in the user mode.
- ③ Upon completion of rotation (LSTR) for the 2,000th copy.

However, if the corona wire is cleaned under conditions 1 and 2 above, the cleaning will be every 2,000 copies thereafter.

2. Cleaning the Corona Wire

Each corona wire is cleaned by moving the corona wire cleaner back and forth.

The corona wire cleaner is driven by the cleaning motor provided for each corona assembly and makes a single trip (back and forth) over the wire for cleaning, taking about 60 seconds.

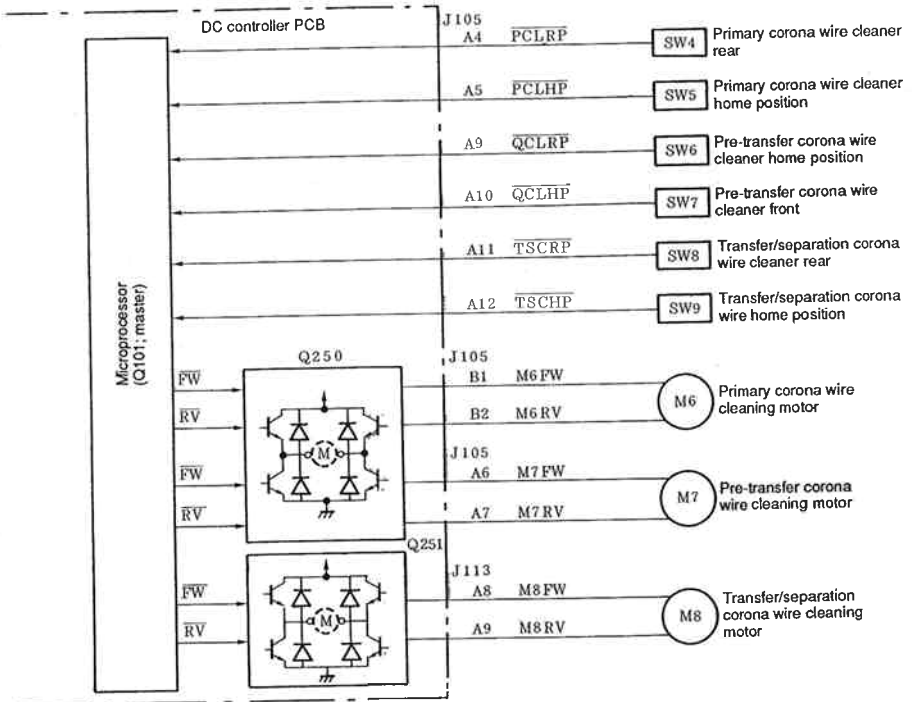


Figure 3-328

IV. PICK-UP/FEEDER SYSTEM

A. Outline

As discussed previously in the section on the lens drive system, the copy paper is picked up and fed using the center reference method to ensure stable movement of the paper.

The pick-up system encompasses feeding from the upper and lower front trays, side tray, and multifeeders and re-feeding for two-sided/overlay copies.

In addition to the paper path for one-sided copies, the feeder system has another path used for two-sided/overlay copies (No. 2 feeder assembly and holding tray); the paper is guided into either of the paths by the No. 1 paper deflector.

In the one-sided copy mode, the copy paper picked up from the upper/lower tray, side tray, or multifeeders is controlled by the registration roller so that the leading edge of the image on the photosensitive drum and that of the paper match; it then is forwarded to the transfer, separation, feeder, fixing, and delivery assemblies and onto the copy tray.

In the two-sided/overlay copy mode, on the other hand, the copy paper, after fixing on the first side, is stacked on the holding tray; the paper is then picked up from the holding tray to move through the same path as one-sided copies all the way to the copy tray.

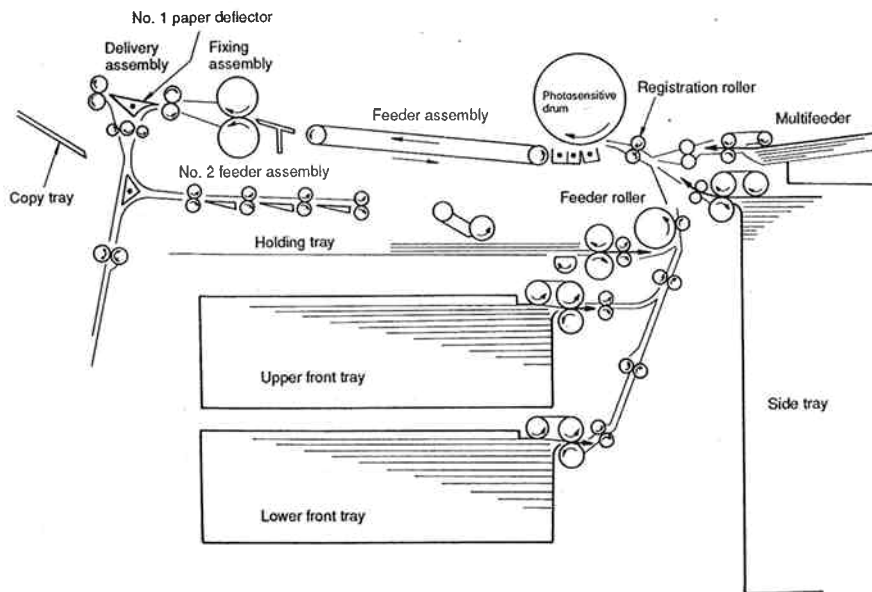


Figure 3-401

A total of 14 sensors are provided to monitor the movement of copy paper; see Figure 3-402 for the arrangement of these sensors.

Sensor	Location	Sensor	Location
Q7	Claw assembly of fixing assembly	Q23	Lower pick-up/feeder assembly
Q10	Fixing assembly	Q24	Upper pick-up/feeder assembly
Q11	Paper reversing assembly inlet	Q26	Re-feeder assembly
Q12	No. 2 feeder assembly inlet	Q27	Holding tray
Q13	Paper reversing assembly	Q30	Pre-registration assembly
Q14	Paper reversing assembly outlet	Q33	Re-feeder assembly
Q15	Delivery assembly		
Q16	No. 2 feeder assembly		

Table 3-401

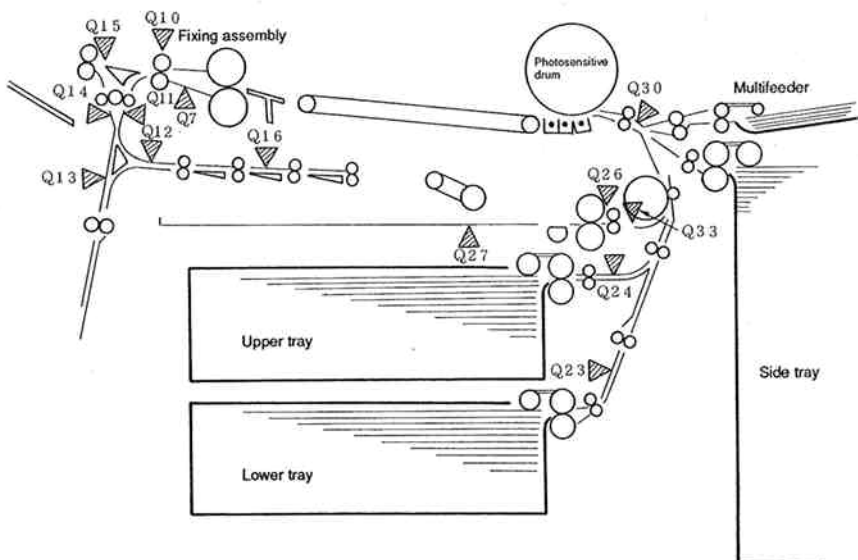


Figure 3-402

B. Side Tray

1. Pick-Up Mechanism

The copy paper set on the side tray is moved up by the lifter and is stopped at a specific point.

When the side tray pick-up clutch (CL11) goes ON, the pick-up roller starts to rotate, feeding the copy paper. The side tray pick-up roller release solenoid (SL7) then goes ON, causing the pick-up roller to move away from the surface of the paper.

The pick-up/feeder roller and the separation roller ensures that no more than one sheet of copy paper is forwarded.

The feeder roller rotates when the side tray feeder roller clutch (CL8) is ON to send the copy paper to the registration roller.

The registration roller controls the leading edge of the copy paper so that it matches that of the image on the photosensitive drum; see p. 3-83.

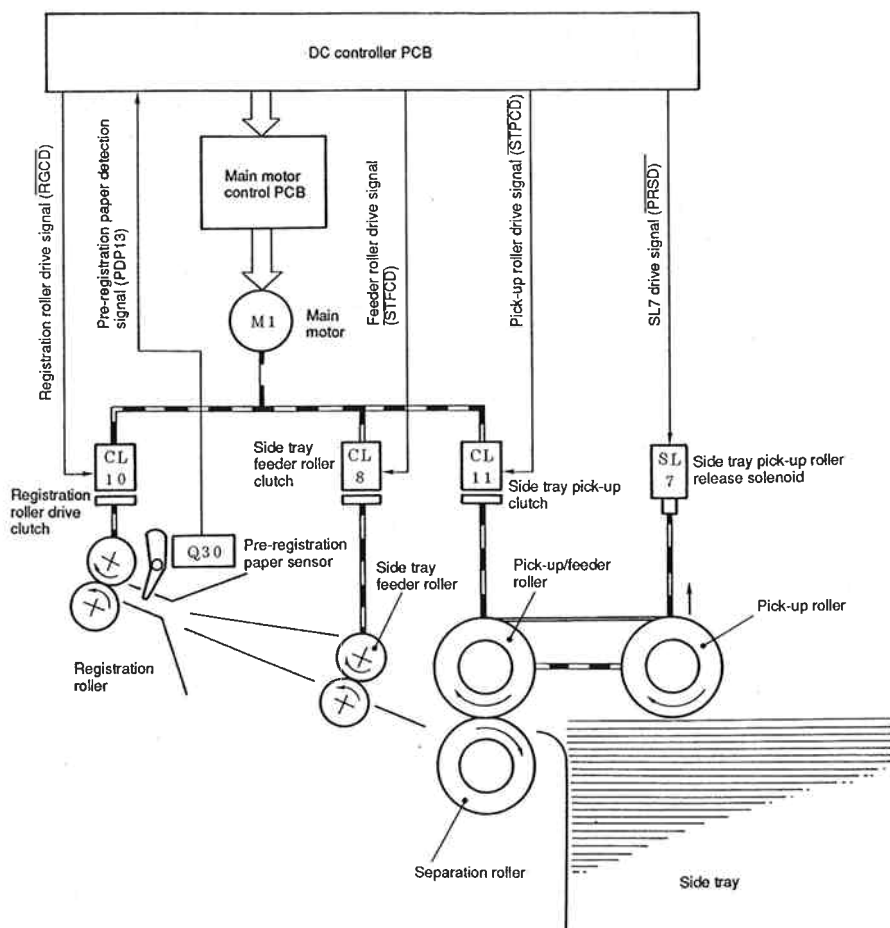


Figure 3-403



3. Side Tray Lifter Mechanism

a. Outline

The side tray lifter is driven by the side tray motor (M4) through gears and chains and is moved up and down as the motor changes its direction of rotation.

The side tray motor (M4) is turned ON and OFF or its direction of rotation is changed based on combinations of signals coming from the sensors and the switches shown in Figure 3-405 (Q17, SW10, SW11, SW12) as well as from the microprocessor (Q101; master).

The lifter moves up and stops when the top of the stack of copy paper is detected by the lifter position sensor (Q17).

When the copy paper runs out and the sensor arm reaches Q18, the ADD PAPER message will be displayed on the control panel; at the time, the limiter moves up until it presses the upper limit switch (SW10).

The lifter, on the other hand, moves down and stops when the lifter cam pushes the lower limit switch (SW11).

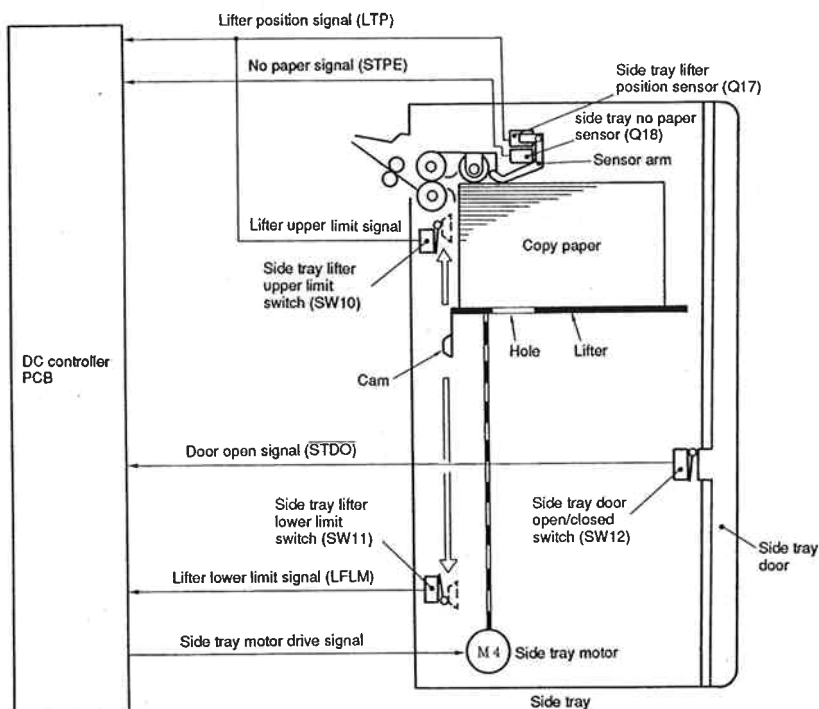


Figure 3-405

b. Side Tray Motor Control Circuit

The side tray motor control circuit is attached to the DC controller PCB. Figure 3-406 shows a block diagram of the circuit.

The combination circuit in the illustration consists of various logic circuits and, combining the output signals from sensors and the control signals from the microprocessor, generates the up/down switching signal and the side tray motor ON signal ('0'). These two signals combine to activate the motor drive circuit to rotate the side tray motor forward or in reverse.

If an overcurrent flows because of a short circuit in the motor, the side tray motor ON signal is forced OFF by the overcurrent detection circuit. When these circuits have been activated, the machine can be reset by removing the cause of activation and then switching it OFF and ON.

① Conditions for Moving the Lifter Up

- The side tray door is closed; i.e., the door open signal (STDO) is '0'.
- The light-blocking plate is not at the lifter position sensor and the lifter upper limit switch is OFF, i.e., the lifter position signal (LTP) is '0'.
- The motor ON control signal from Q101 is '0'.
- The lifter up/down control signal from Q101 is '0'.

The above conditions cause the following output signals from the combination circuit to go '0', which in turn causes the lifter to go up:

up/down switching signal
side tray motor ON signal

② Conditions for Moving the Lifter Down

③ Conditions for Moving the Lifter Up

a. Condition 1

- The side tray door is open; i.e., the door open signal (STDO) is '1'.
- The lifter lower limit switch (SW11) is OFF; i.e., the lifter lower limit signal (LFLM) is '1'.

The above condition results in the following: up/down switch signal is '1'; and side tray motor ON signal is '0'. The state, in turn, lowers the lifter.

b. Condition 2

- A jam causes the output signal lifter up/down control signal from the microprocessor (Q101) to change from '0' to '1'.

The above condition causes the up/down switch signal to go '1', thus lowering the lifter.

At the time, the lifter will not lower to its limit but stops when the top face of the paper has lowered a maximum of 12.5 mm.

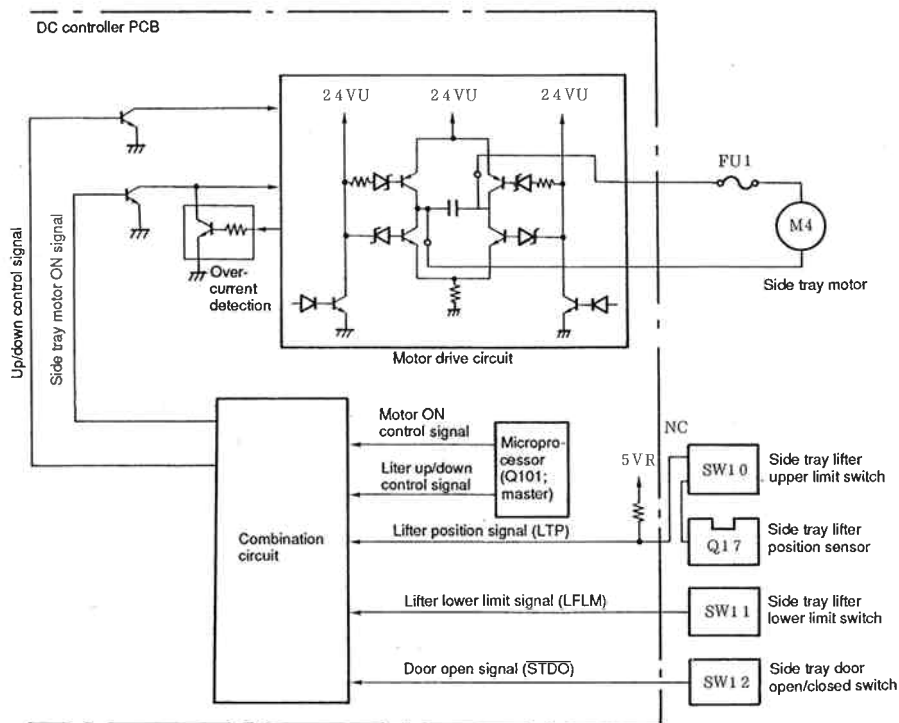


Figure 3-406

C. Upper/Lower Front Tray

1. Pick-UP Mechanism

The copy paper on the tray is moved up by the lifter and is brought into contact with the pick-up roller.

When the pick-up clutch (CL4 or CL5) goes ON, the pick-up roller rotates to forward the copy paper; thereafter, the pick-up roller release solenoid (SL11 or SL15) goes ON, thereby moving the pick-up roller away from the paper.

The copy paper is then moved onto the paper path, with the pick-up/feeder roller and the separation roller making sure that only a single sheet of paper is sent. The feeder roller then moves the copy paper as far as the registration roller.

The registration roller controls the copy paper so that its leading edge and that of the image on the photosensitive drum match; see p. 3-83.

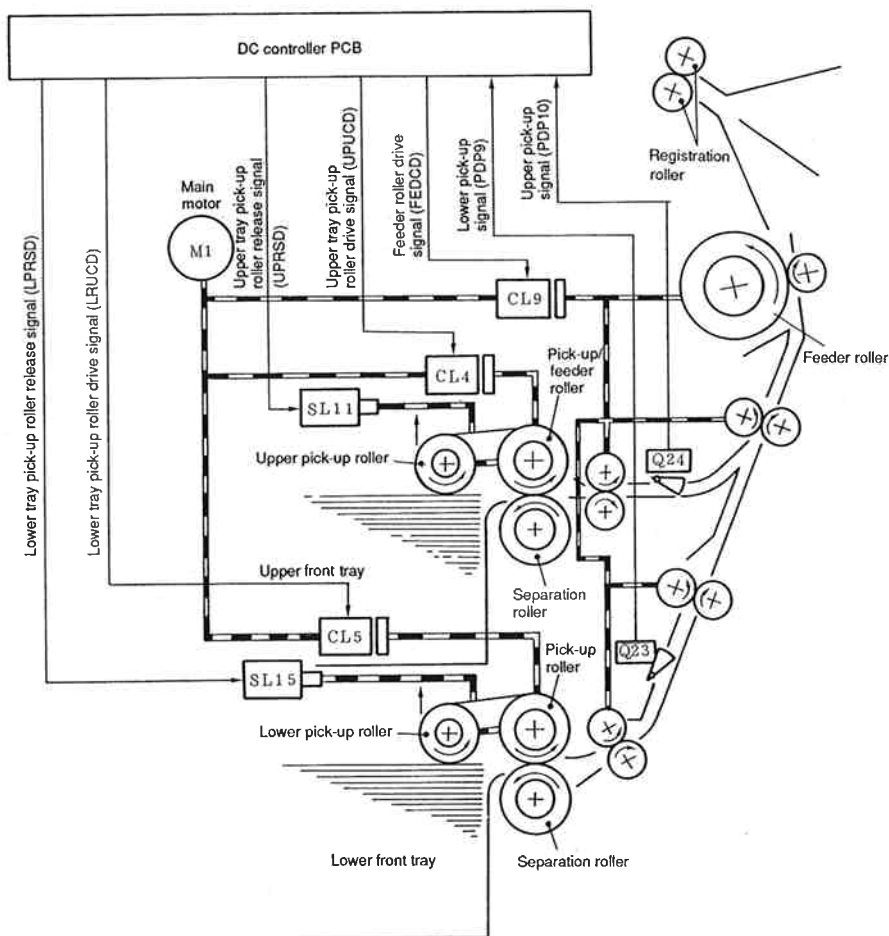


Figure 3-407

2. Pick-Up from Tray

a. Pick-Up from Upper Tray

COPY START key ON

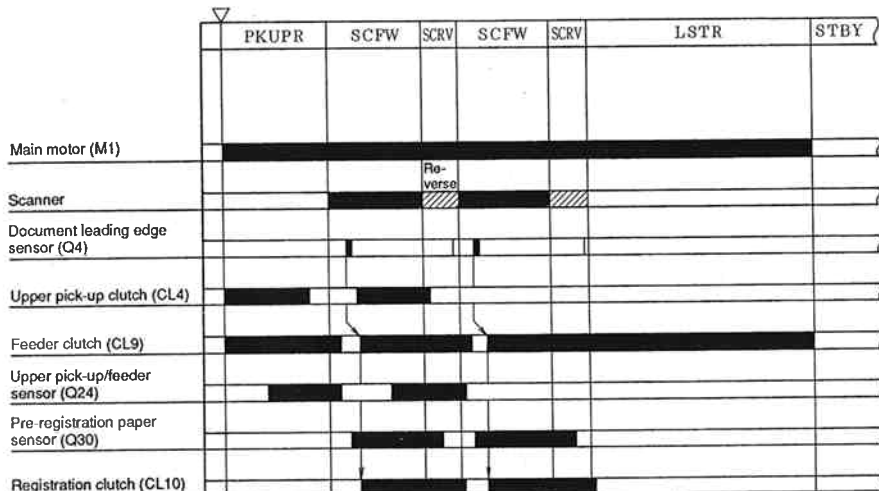


Figure 3-408

b. Pick-Up from Lower Tray

COPY START key ON

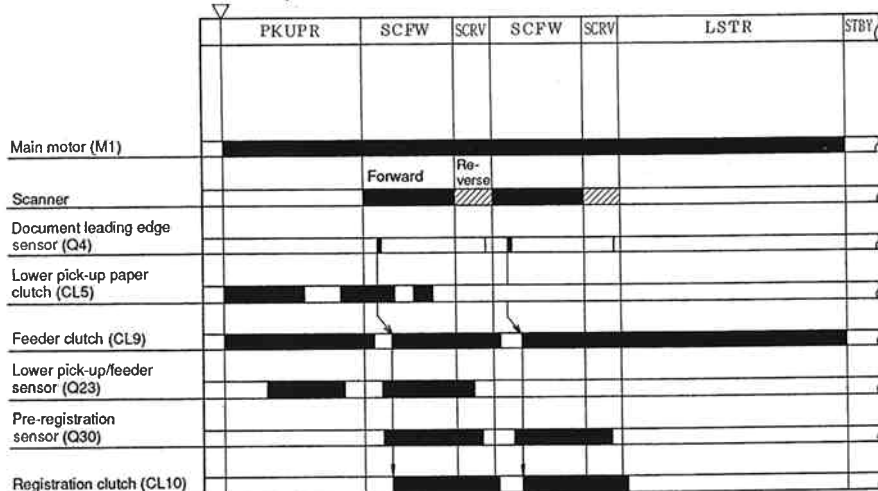


Figure 3-409

3. Lifter Mechanism

a. Outline

When the upper or lower tray is pushed inside the machine, the lifter on the tray pushes the tray open/closed switch (SW14, SW15; see Figure 3-410), causing the lifter to move up and stop, enabling the lifter position sensor (Q19, Q21) to detect the top of the stack of copy paper (Figure 3-411).

When the copy paper runs out and, consequently, the sensor arm comes into contact with the tray paper sensor (Q20, Q22; Figure 3-411), the ADD PAPER message is displayed on the control panel. The tray then keeps moving up until the lifter cam pushes the upper limit switch (SW16, SW18; Figure 3-410).

The lifter starts to lower when the tray open switch is pushed and keeps lowering until the lifter cam pushes the lower limit switch (SW15, SW19; Figure 3-410).

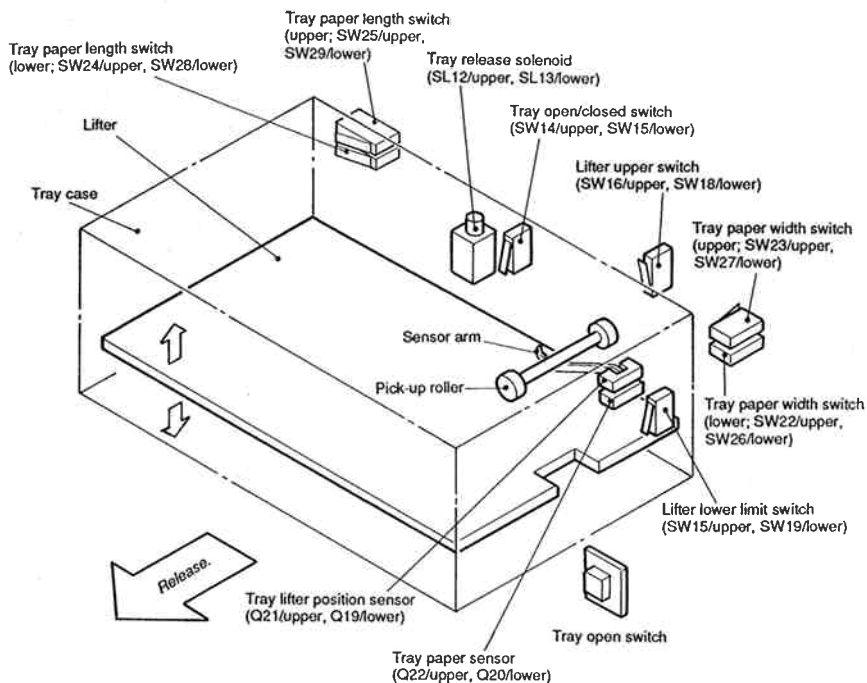


Figure 3-410 (upper/lower tray sensors)

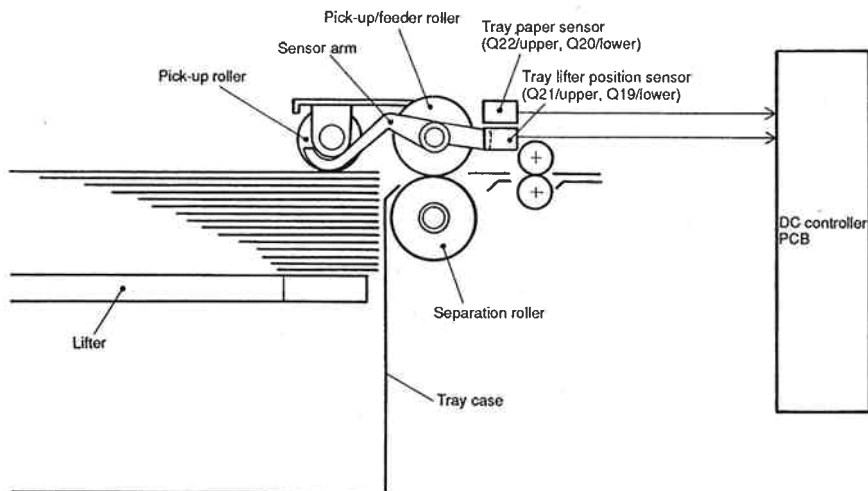


Figure 3-411 (cross section)

The lifters in the upper and lower trays are suspended on cable connected to reels.

The reel is rotated by the drive of the lifter motor (M3/upper, M14/lower) and, by changing the direction of rotation, the cable is taken up or released to move the lifter up or down.

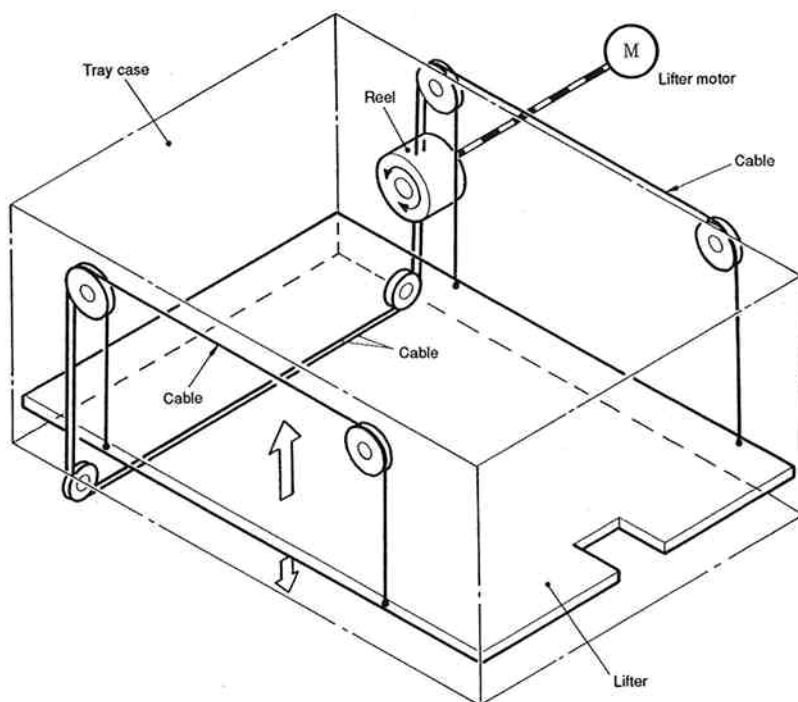


Figure 3-412

b. Lifter Motor Control Circuit

The control circuit for the upper/lower tray lifter motor (M3, M14) is on the DC controller PCB; Figure 3-413 is a block diagram of the circuit.

The signals from the sensors and the switches are taken into the microprocessor (Q101), and the microprocessor in turn sends control signals suited to each different condition.

The combination circuit consists of various logic circuits; it combines control signals from the microprocessor and generates the up/down switching signal and motor ON signal.

These two signals activate the motor drive circuit to cause the tray lifter motor (M3, M14) to rotate forward/in reverse or stop.

The motor ON signal will be forced OFF to stop the motor if the overcurrent detection circuit finds a short circuit caused by an overcurrent.

After activation of the circuit, the machine may be reset by removing the cause and switching it OFF and then ON.

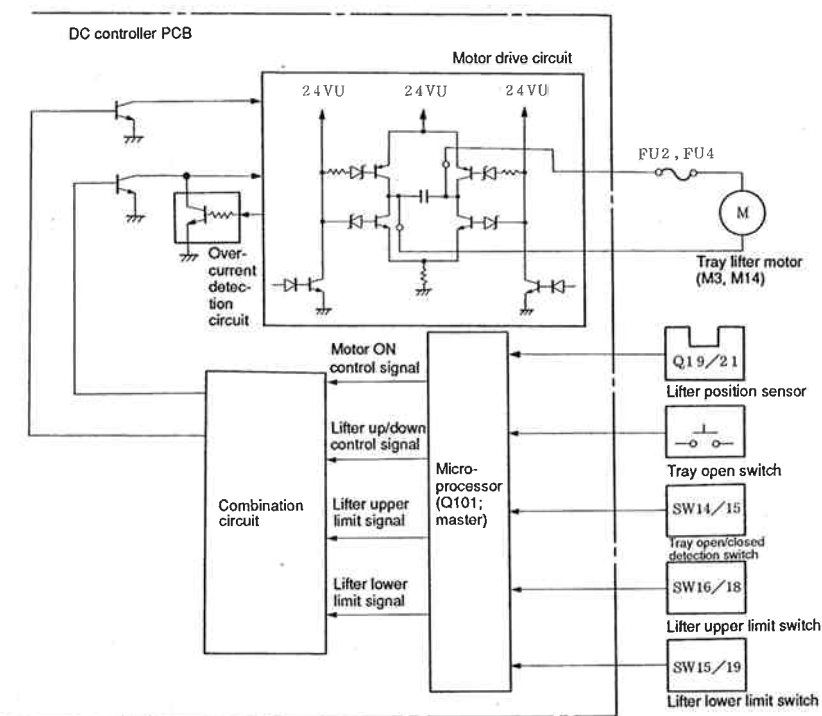


Figure 3-413

4. Opening and Closing the Tray

When the tray open switch is pressed, the tray motor (M3 or M14) starts to rotate to lower the lifter in the tray. Thereafter, when the lifter lower limit switch (SW17 or SW19) detects the lifter, the tray motor stops and the tray release solenoid goes ON to unlock the tray.

When unlocked, the tray is pushed toward the front over several centimeters by the work of a spring.

At this, if the tray is pushed inside, the tray open/closed sensor (SW14, SW15) goes ON, thereby causing the tray motor to rotate in reverse to move up the lifter.

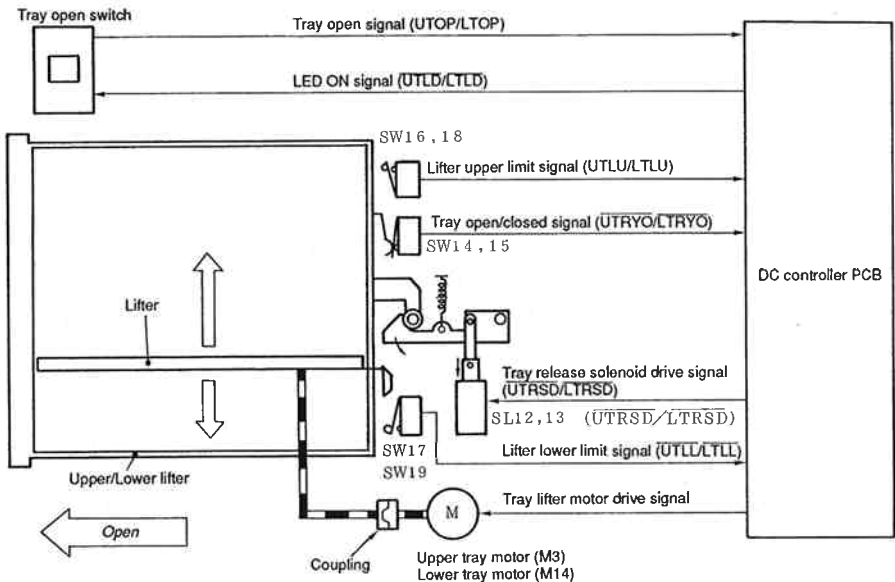


Figure 3-414

5. Sequence (front tray opening/closing)

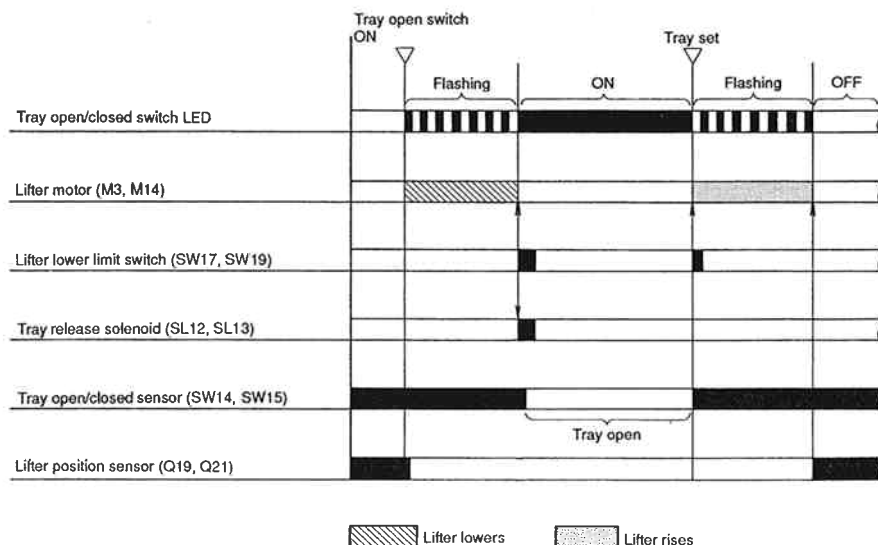


Figure 3-415

6. Identifying the Size of Copy Paper

The switches identifying the size of copy paper are actuated when the upper or lower tray is inserted into the machine.

The combinations of switches which have been actuated enable the microprocessor to identify the size of copy paper and, at the same time, to determine the positioning of the lens, reversing of the scanner, and controlling of the blank exposure lamp; see Table 3-402.

The tabs used to actuate the switches will differ if the copy guide plate in the tray is relocated.

		Size identification switches			
Copy paper	Upper tray	SW22	SW23	SW24	SW25
	Lower tray	SW26	SW27	SW28	SW29
LGL		OFF	OFF	OFF	OFF
11" x 17"		ON	OFF	OFF	OFF
B4		OFF	ON	OFF	OFF
A3		ON	ON	OFF	OFF
A4R		OFF	OFF	ON	OFF
LTR- R		OFF	OFF	OFF	ON
B5R		OFF	OFF	ON	ON
LTR		ON	OFF	ON	ON
B5		OFF	ON	ON	ON
A4		ON	ON	ON	ON

Table 3-402

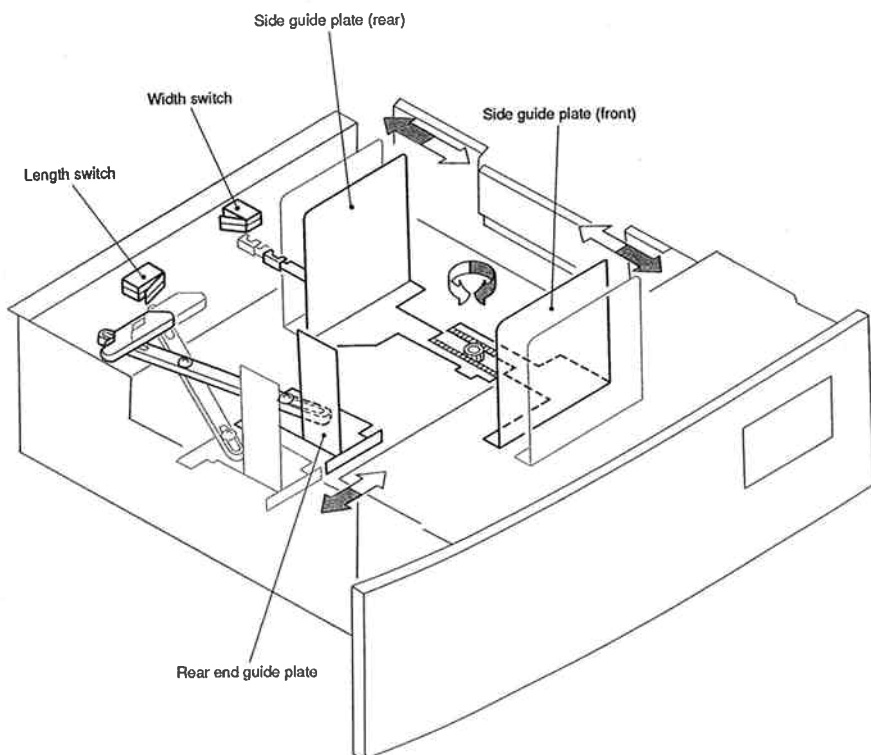


Figure 3-416

D. Multifeder

1. Pick-Up

When copy paper is placed on the multifeder tray, the multifeder paper sensor (Q29) goes ON to enable the selection of the multifeder.

When the COPY START key is pressed with the multifeder selected, the multifeder pick-up clutch

goes ON and, as a result, the pick-up roller, pick-up/feeder roller, and separation roller start to rotate. Then, the multi pick-up roller engage solenoid (SL14) goes ON to lower the rotating pick-up roller onto the stack of copy paper.

The copy paper then is ready to move from the tray to the inside of the machine.

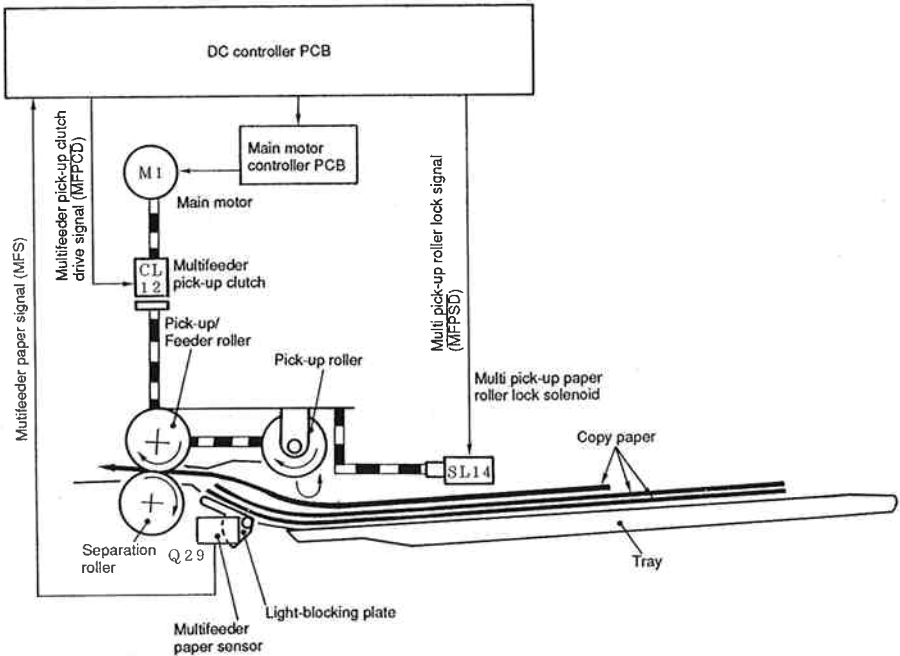


Figure 3-417

2. Identifying the Width of Paper

A variable resistor is attached to the slide guide of the multifeder to identify the width of copy paper. The identified width is used for controlling the lens.

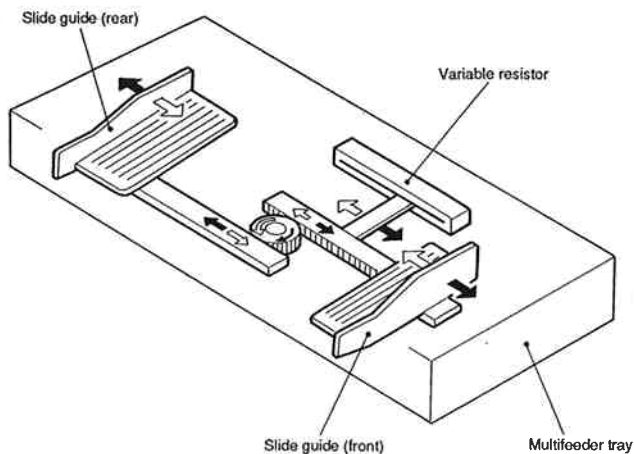
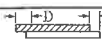
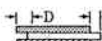
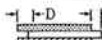
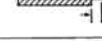
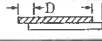
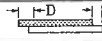
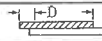
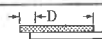
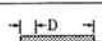
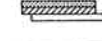
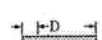
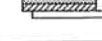
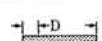
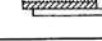


Figure 3-418

E. Controlling the Registration Clutch

The registration clutch serves to match the copy paper and the image on the drum at a specific point. Except for the binding mode, the registration is controlled along the leading edge of the copy paper and that of the image on the drum.

In the binding mode, registration is controlled as in Figure 3-419 to create a binding margin on the copy paper.

Mode		Timing	Shift (mm)	Copy paper on copy tray
one-sided document to one-sided copy		B		
one-sided documents to two-sided copy	1st side copy	A		
	2nd side copy	B		
two-sided document to two-sided copy	1st side copy	A		
	2nd side copy	B		
two-sided document to one-sided copies	1st side copy	B		
	2nd side copy	B		
page separation (one-sided copies)	1st side copy (left)	B	May be reset to between 0 to 20 mm; illustrations represent when shift is set to 5 mm.	
	2nd side copy (right)	B		
page separation (two-sided copies)	1st copy (left)	A		
	2nd side copy (right)	B		
one-sided documents to overlay copy	1st side copy	B		
	2nd side copy	B		
two-sided document to overlay copy	1st side copy	B		
	2nd side copy	B		
page separation (overlay copies)	1st side copy (left)	B		
	2nd side copy (right)	B		

 Copy paper
  Image area on 1st side copy
  Image area on 2nd side copy
 area D: blanked by blank exposure lamp.

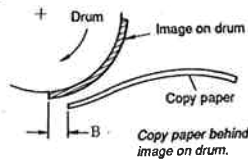
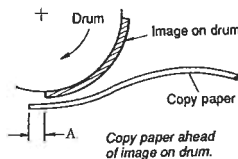


Figure 3-419

F. Overlay Copy (1st side)

The paper path for the first side of an overlay copy is formed when the No. 1 paper deflector is moved up by the solenoid (SL3).

The No. 1 paper deflector starts to move up about 1.6 seconds after the copy paper has reached the pre-registration paper sensor (Q30).

The copy paper, by the work of the No. 1 paper deflector, is moved to the No. 2 feeder assembly and then to the holding tray.

Each time copy paper (1st side) is brought to the holding tray, the auxiliary feeder roller is lowered to the stack of copy paper for better stacking.

The auxiliary feeder roller is made to lower about 1 second after the No. 2 feeder assembly inlet sensor (Q12) has detected copy paper.

The capacity of the holding tray is:

50 sheets: A4, B5, LTR

25 sheets: A4R, A3, LTR-R, LGL,

11 x 17

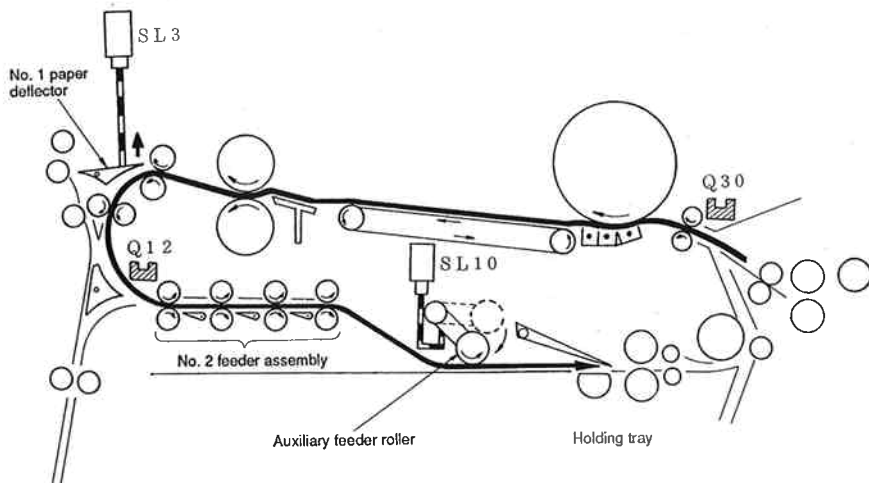
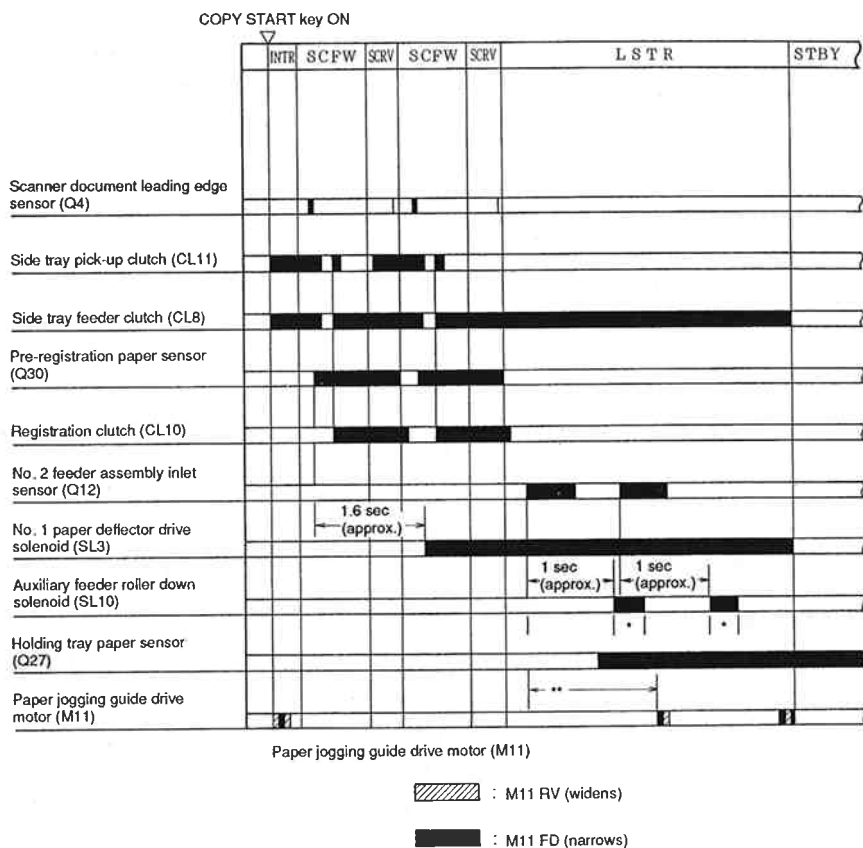


Figure 3-420

1. Overlay Copy (1st side)



* Varies depending on the height of the stack.

** Varies depending on the size of the copy paper.

Figure 3-421

G. Two-Sided Copy (1st side)

The paper path for the first side of a two-sided copy is formed by the No. 1 paper deflector and the No. 2 paper deflector.

The No. 1 and No. 2 paper deflectors go ON about 1.6 seconds after the pre-registration sensor (Q30) has detected copy paper.

After the trailing edge of the copy paper has moved past the paper reversal sensor (Q13), the switch-back FD clutch (CL2) goes OFF and the switch-back RV clutch (CL3) goes ON. In this condition, the copy paper is *switch-backed* and sent to the No. 2 feeder assembly then to the holding tray.

Each time copy paper (1st side) is brought to the holding tray, the auxiliary feeder roller is lowered to the stack of copy paper for better stacking.

The auxiliary feeder roller starts to lower about 1 second after the No. 2 feeder assembly inlet sensor (Q12) has detected copy paper.

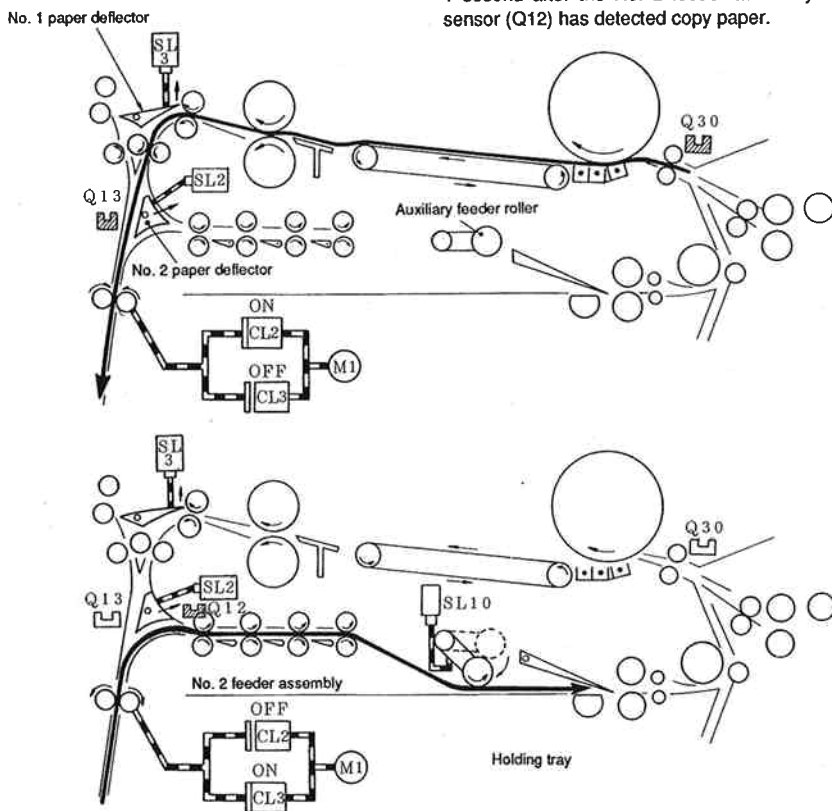
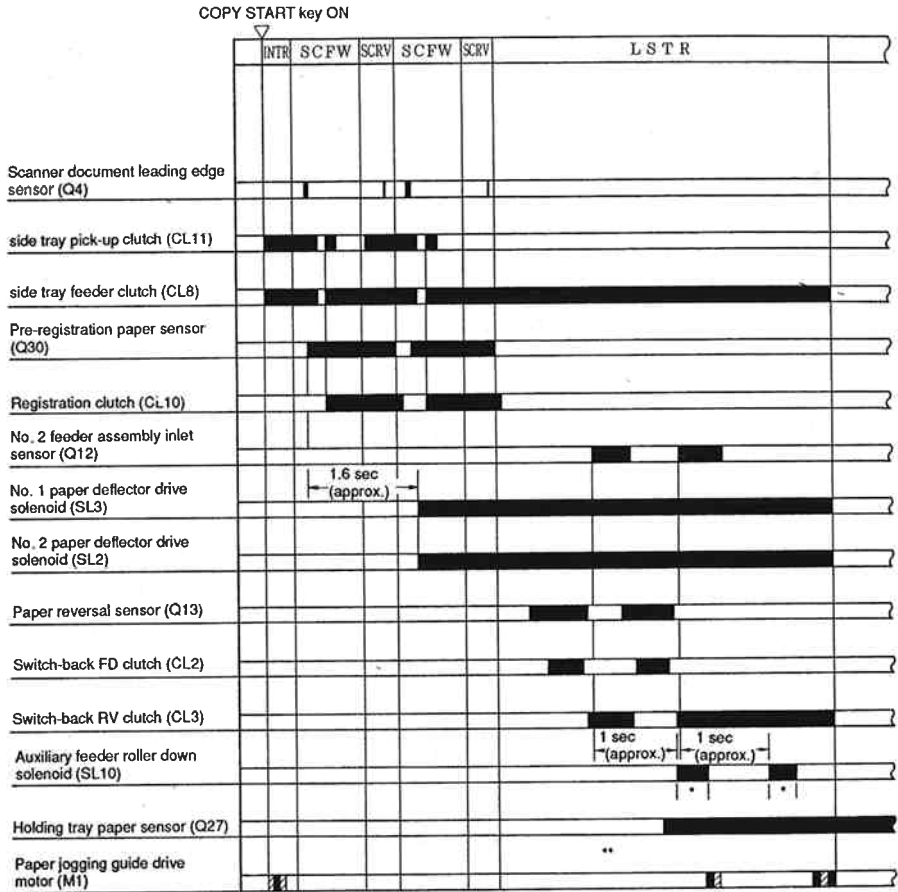


Figure 3-422

1. Two-Sided Copy (1st side)

- 2 copies



Paper jogging guide drive motor (M11)

▨ : M11 RV (widens)

■ : M11 FD (narrows)

- * Varies depending on the height of the stack.
- ** Varies depending on the size of the copy paper.

Figure 3-423

H. Two-Sided/Overlay Copy (2nd side)

For the second side of two-sided/overlay copies, the pick-up is from the holding tray.

When the COPY START key is pressed, the re-feeder clutch (CL6) and the re-feeder roller drive solenoid (SL9) go ON. At the same time, the copy paper shutter is released by the re-pick up assembly release solenoid (SL8) to feed a single sheet of copy paper. The copy paper then is sent to the registration roller by the feeder roller.

The registration roller starts to rotate in response to the document leading edge detection signal to start copying on the second side.

The No. 1 paper deflector remains down; therefore, the copy paper moves to the copy tray after fixing.

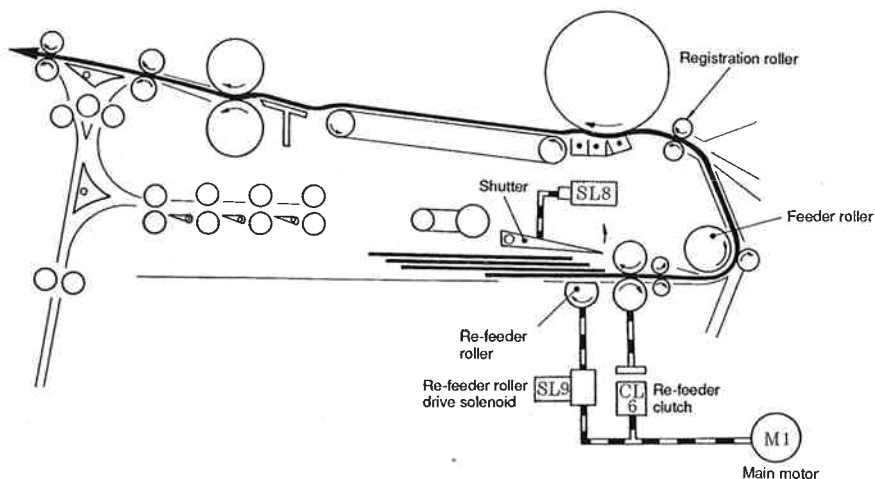


Figure 3-424

1. Overlay/Two-Sided Copy

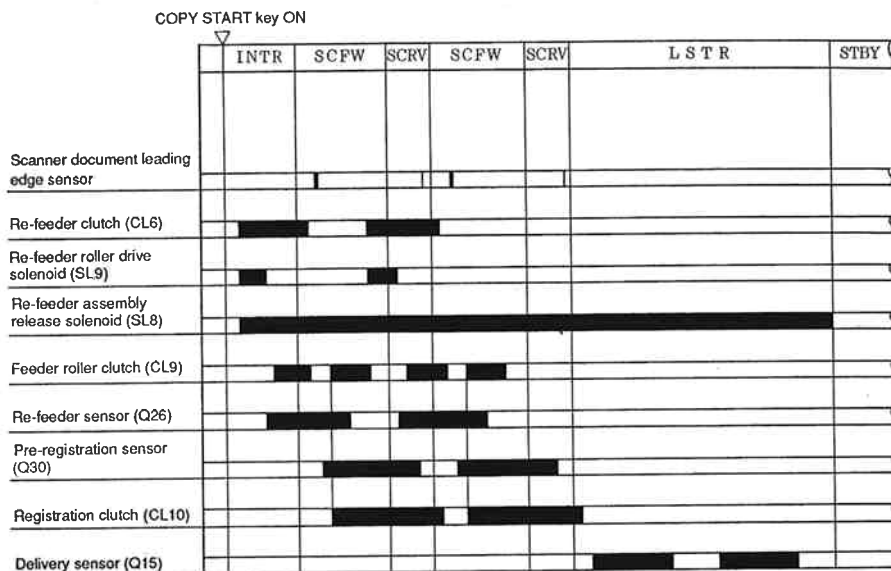


Figure 3-425

I. Accommodating Different Sizes (overlay/two-sided copy)

1. Paper Jogging Guide

When the COPY START key is pressed in the overlay/two-sided copy mode, the paper jogging guide drive motor (M11) starts to rotate in reverse to move the paper jogging guide into the direction of the arrow; see Figure 3-426.

The motor stops as soon as the light-blocking plate of the guide blocks the home position sensor (Q28).

Next, the DC controller PCB sends pulses in numbers corresponding to the size of the copy paper to the motor.

The motor, in response, rotates forward to

move the paper jogging guide to suit the width of the copy paper. The motor then rotates in reverse and stops the jogging guide at a point about 6 mm (one side) away from the edge of the copy paper to wait for copy paper.

When the copy paper reaches the tray, the motor rotates forward, moving the guide 6 mm, and rotates in reverse, moving the guide 6 mm, to straighten the copy paper.

The distance over which the guide moves may be fine-tuned in service mode (*4*) in 1 mm increments.

When the last copy paper reaches the guide, the motor repeats forward, reverse, and then forward rotation in preparation for copying on the second side.

During copying on the second side, the motor does not rotate but waits standing by for copying on the first side once again.

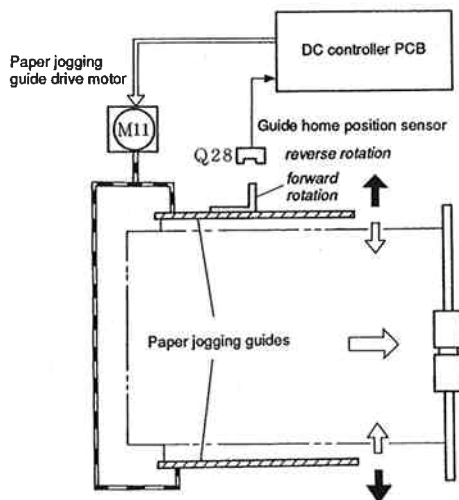


Figure 3-426 Tray (top view)

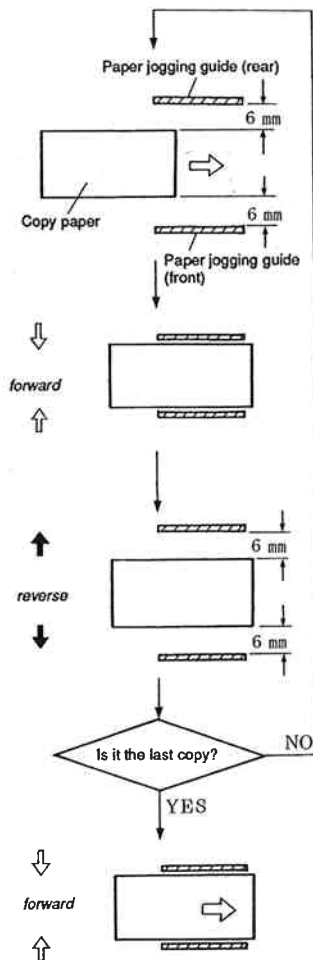


Figure 3-427 Jogging Copy Paper

2. Changing the Paper Path (No. 2 feeder assembly)

When copying onto the second side of two-sided or overlay copies, the path in the No. 2 feeder assembly is changed to suit the size of the copy paper.

There are four paper paths, created by three paper deflectors.

The paper deflectors are driven by their respective solenoids; see Table 3-403.

Each of the paper deflectors moves up to change the path about 0.1 second after copy paper reaches the fixing assembly paper sensor (Q10).

	①	②	③	④
Length of paper	to 229mm	230mm to 299mm	300mm to 369mm	370mm up
SL4	OFF	ON	OFF	OFF
SL5	OFF	OFF	ON	OFF
SL6	OFF	OFF	OFF	ON

Note:

- ① A4, B5, LTR
- ② A4R, LTR-R
- ③ B4, LGL
- ④ A3, 11"x17"

Table 3-403

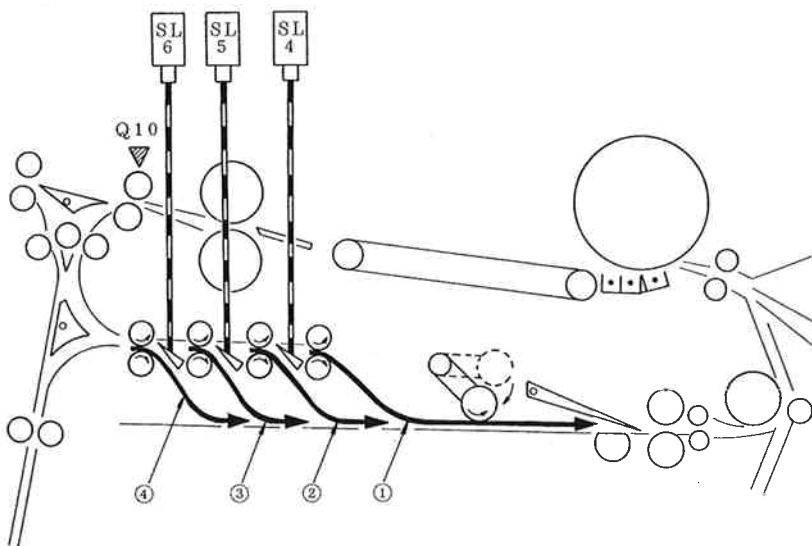


Figure 3-428

J. Skipping

1. Outline

The mechanism called *skipping* is used for making two-sided copies of one-sided documents. In this mechanism, every other document is skipped to make full use of the space in the No. 2 feeder assembly, i.e., limiting the condition in which no paper is found in the feeder.

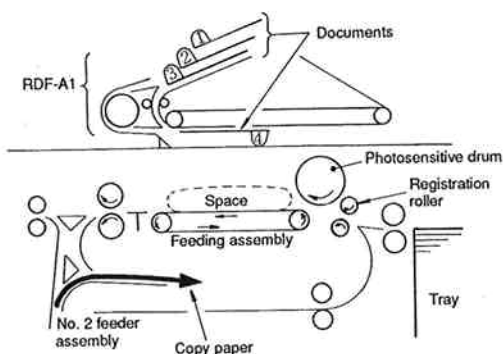


Figure 3-429

The mechanism is executed only when all conditions given below are met:

- With the RDF-A1, two-sided copies are made of one-sided document;
- The copy count is set to '1';
- The copy size is A4, B5, or LTR, (not in the LTR-R direction); and
- The binding, and cover modes, and the sub-feeder are not used.

2. Operations

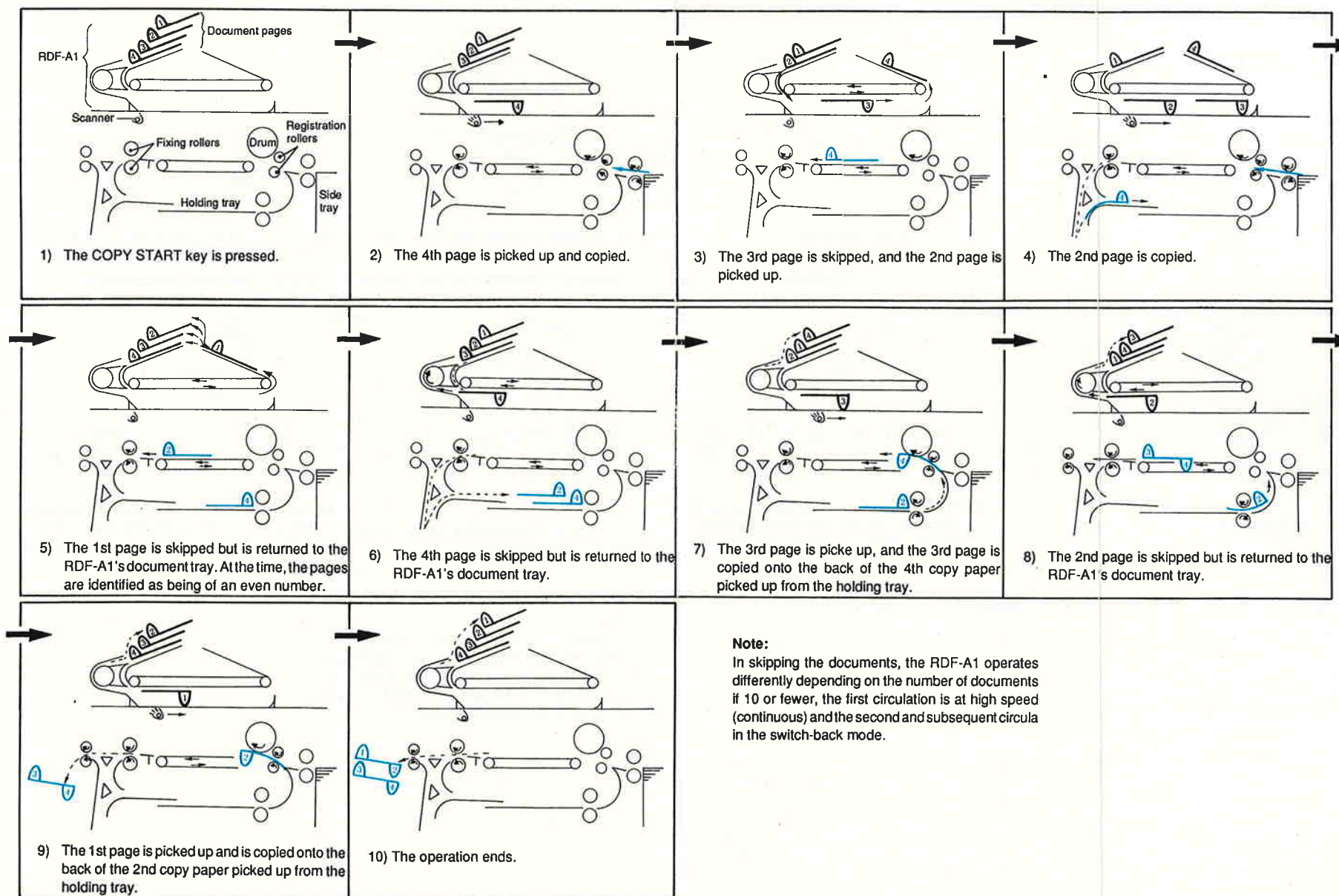
Skipping consists of the following two operations:

- ① Every other document set on the RDF-A1 is copied, and the copies are stacked on the holding tray.
The number of documents (odd or even) is identified as soon as the last document has been fed by the RDF-A1 to determine the type of copy delivery.
- ② Every other document set in the RDF-A1 is copied, i.e., the documents that were not copied in operation 1 above are copied; pick-up is from the holding tray only.

Note:

The skipping mechanism may be disabled in the service mode: 'SKIP' [X] [5] [X].

3. Skipping Operation (even number of documents)

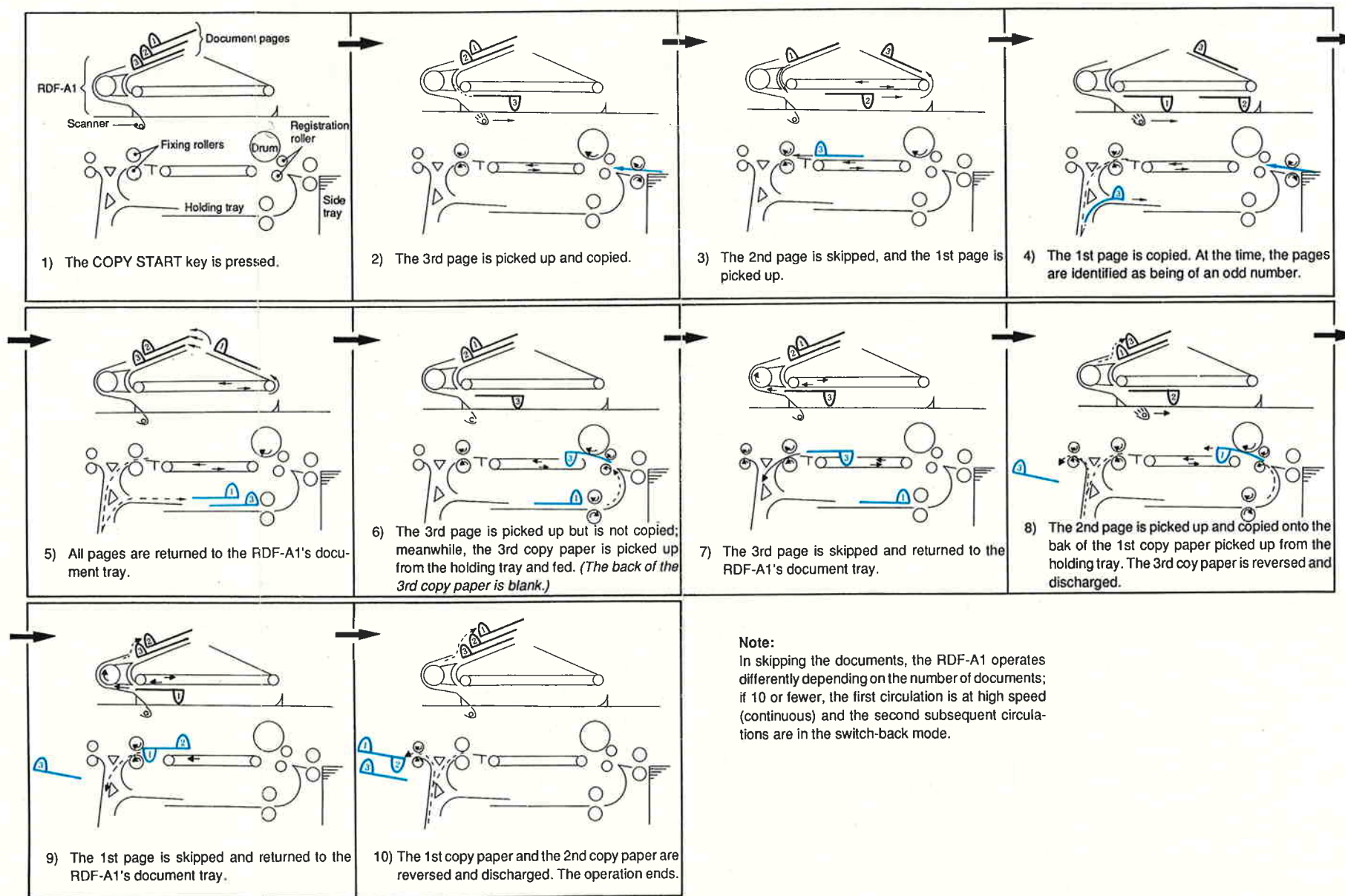


Note:

In skipping the documents, the RDF-A1 operates differently depending on the number of documents. If 10 or fewer, the first circulation is at high speed (continuous) and the second and subsequent circulations are in the switch-back mode.

Figure 3-430

4. Skipping Operation (odd number of documents)



Note:

In skipping the documents, the RDF-A1 operates differently depending on the number of documents; if 10 or fewer, the first circulation is at high speed (continuous) and the second subsequent circulations are in the switch-back mode.

Figure 3-431

K. Fixing and Delivery Assemblies

1. Outline

The upper roller and the lower roller of the fixing assembly and the delivery roller of the delivery assembly are driven by the main motor; see Figure 3-00.

If a jam occurs in the fixing/delivery assembly, the fixing drive stop solenoid (SL17) goes ON to stop the fixing roller at once.

The upper roller has a built-in heater inside; see Figure 3-435.

The fixing temperature is controlled by the DC controller PCB while monitoring the surface temperature of the upper roller using a thermistor (TH1) so that it will be within a specific temperature at all times.

This control mechanism may be in either of the following two modes depending on the time that has elapsed since power-on and the ambient temperature:

- ① 45 minutes from power-on
 - standby: 195°C (383°F)
 - copying: 200°C (392°F)
 - pre-heat: 190°C (374°F)
- ② 45 minutes after power-on; or, when the ambient temperature is 28°C or more, regardless of the passage of time.
 - standby: 190°C (374°F)
 - copying: 195°C (383°F)
 - pre-heat: 185°C (365°F)

The cleaning belt used to clean the upper fixing roller is taken up by the cleaning belt take-up arm being moved up and down by the cleaning belt drive solenoid (SL1).

The cleaning belt drive solenoid may be caused to go ON twice for the 1st side of a two-sided copy* in service mode; it goes ON once for other types of copy.

**Once if so set in the service mode.*

The cleaning belt is provided with notches (2 points); a detection lever, together with two photointerrupters (Q8, Q9), are used to check when the belt will run out.

Note:

main heater:	880 W
sub heater:	340 W
thermoswitch:	240 ± 10°C (464 ± 50°F)

a. Fixing Assembly

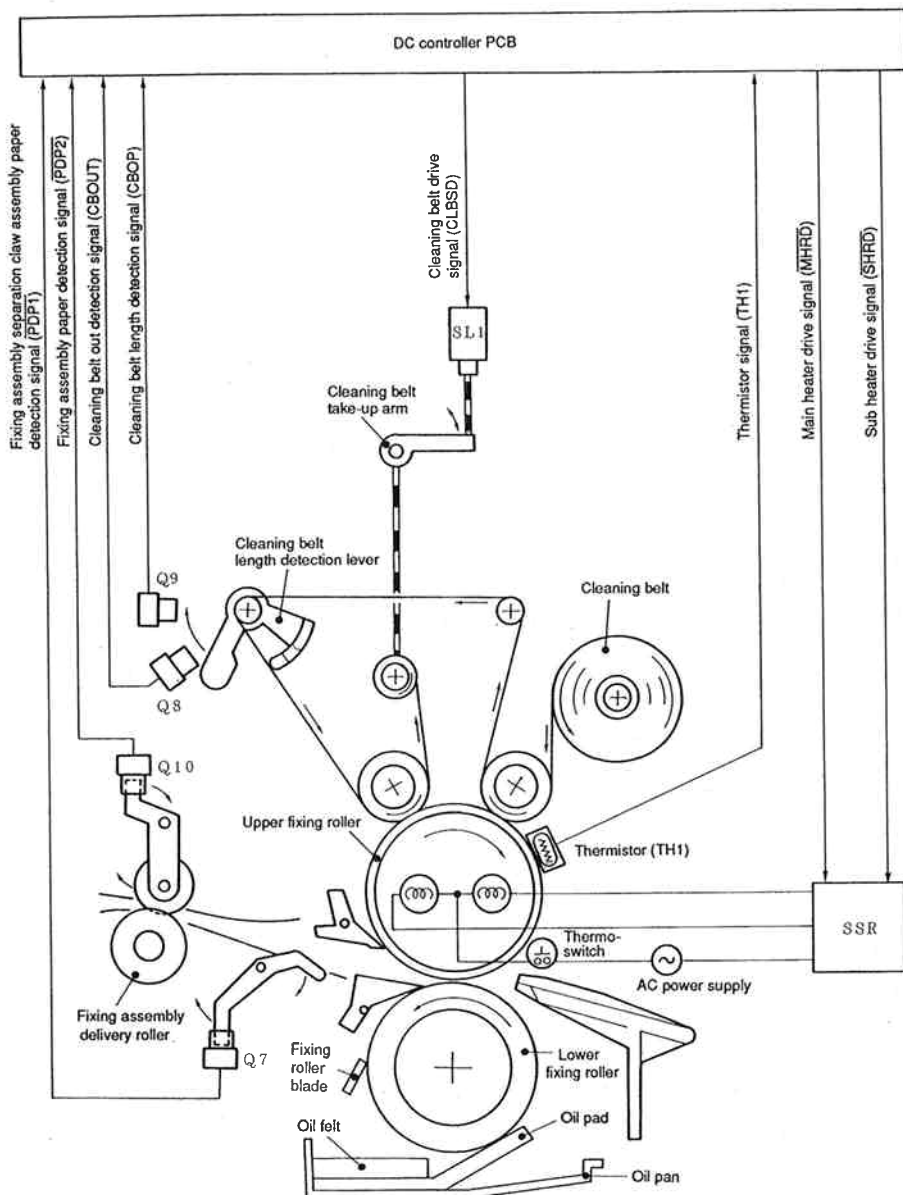


Figure 3-432

b. Fixing/Delivery Assembly Drive System

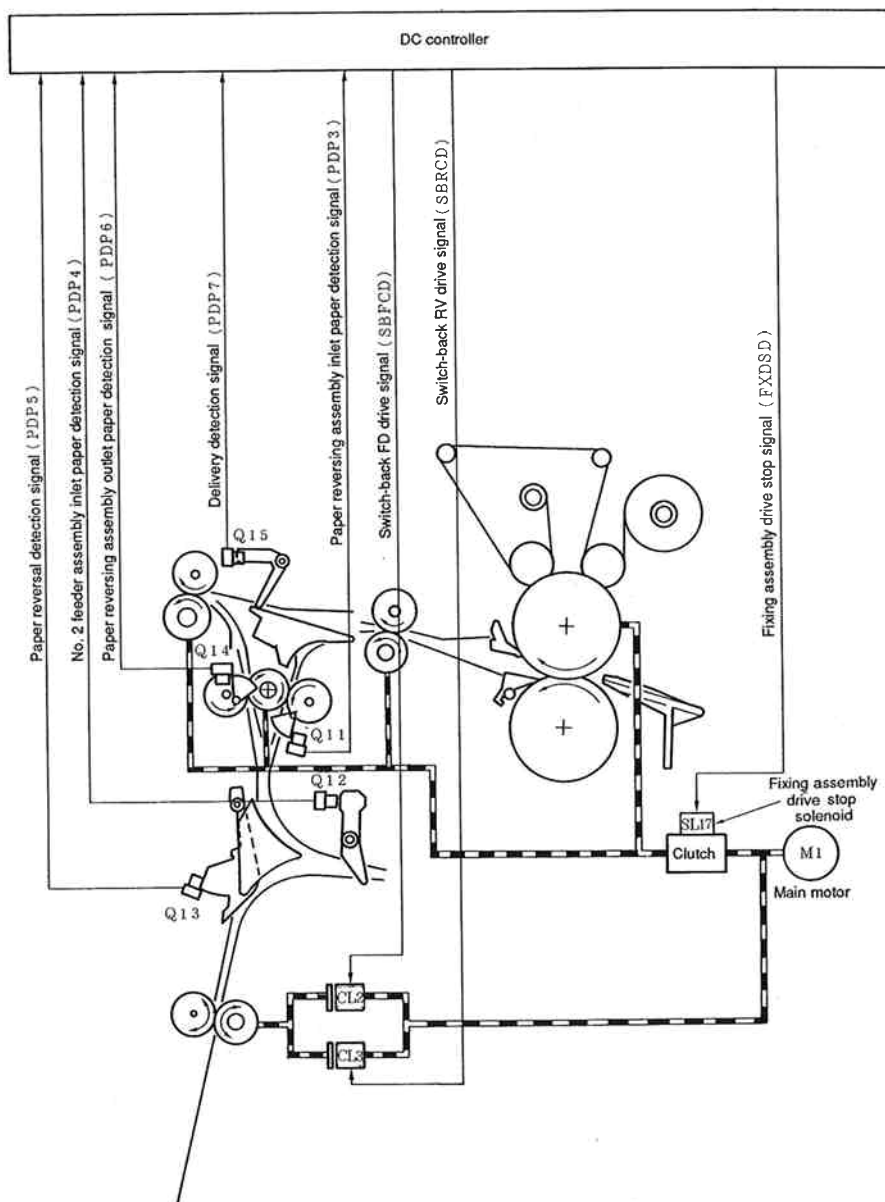


Figure 3-433

2. Cleaning Belt

Both sides of the machine's cleaning belt are kept in contact with the upper fixing roller by the mechanism illustrated in Figure 3-434.

The face of the belt serves to apply silicone oil on the upper fixing roller and the back of the belt to clean the roller.

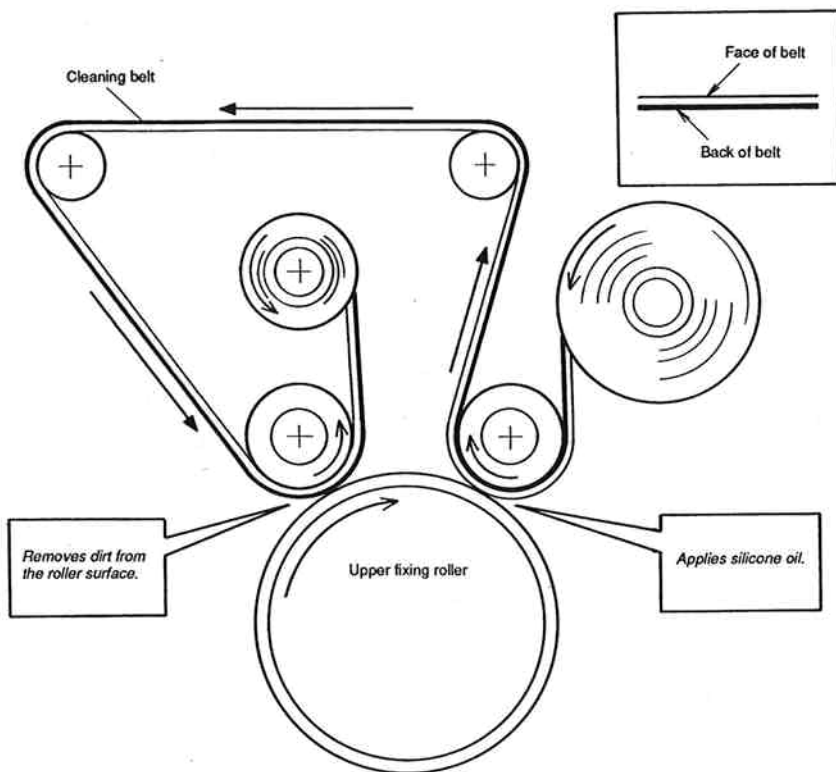


Figure 3-434

3. Checking the Length of the Cleaning Belt

The cleaning belt is provided with two notches; with reference to these notches, the cleaning belt lever (Figure 3-435) mechanically checks the remaining length of the belt.

A warning is displayed on the control panel as soon as the lever comes across the notches.

The relationship between the lever and the sensors, with reference to the shorter of the notches on the belt, is given in Figure 3-435.

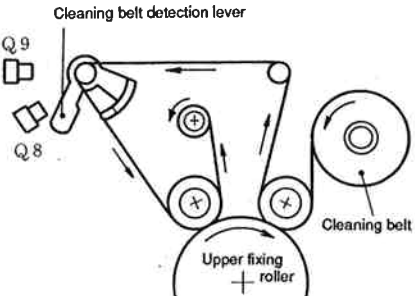
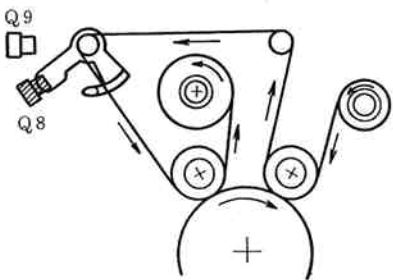
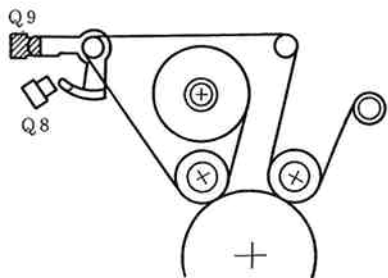
	Photointerrupters		Message on control panel	
	Q8	Q9		
Before detection	OFF	OFF	—	
Detection of short notch	ON	OFF	The warning is displayed only when SW503 on the jam location indication PCB is pressed (upon activation of service mode); immediately after detection, the remaining length of the belt is about 5600 mm, equivalent of about 100,000 copies.	
Detection of long notch	OFF	ON	E005	

Figure 3-435

4. Reciprocating Mechanism for Thermistor

To prevent damage to the upper fixing roller by the thermistor, the thermistor is moved back and forth over a length of 12 mm along the axis of the upper fixing roller; the mechanism is referred to as *reciprocating mechanism*.

The drive of this movement comes from the cleaning belt drive solenoid (SL1) through a one-way arm and a reciprocating cam.

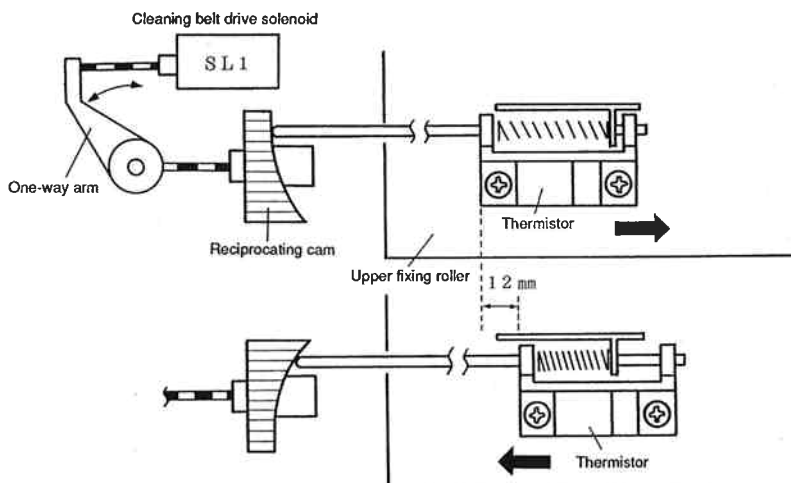


Figure 3-436

5. Reciprocating Mechanism for Upper Separation Claw

To prevent damage to the upper fixing roller, the separation claw is moved back and forth along the axis of the upper fixing roller over a length of 3 mm.

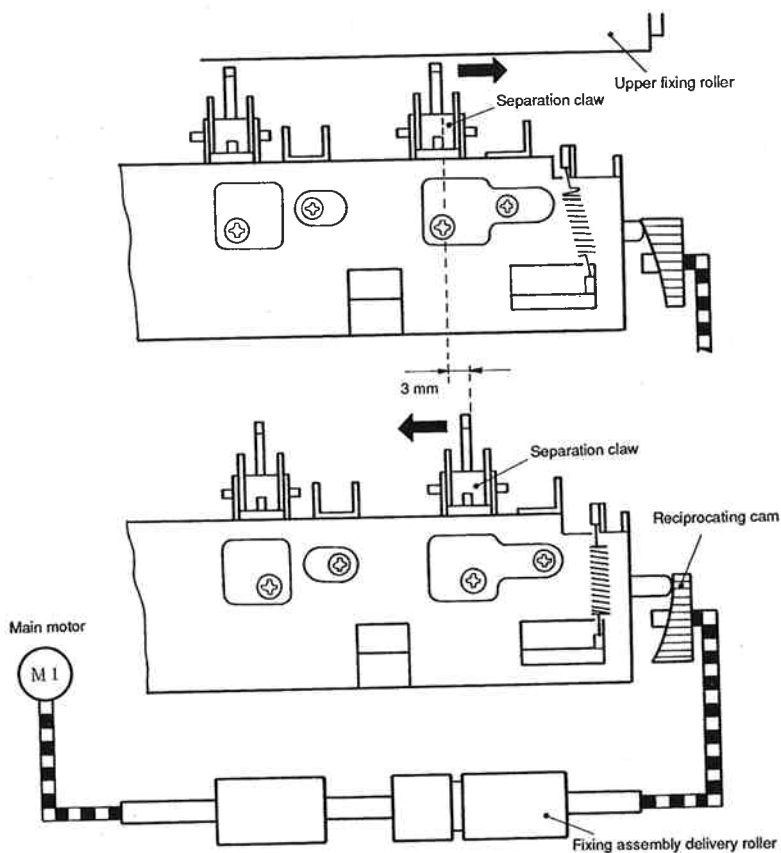


Figure 3-437

6. Sequence for Fixing Assembly (1/2)

- for 45 minutes from power-on

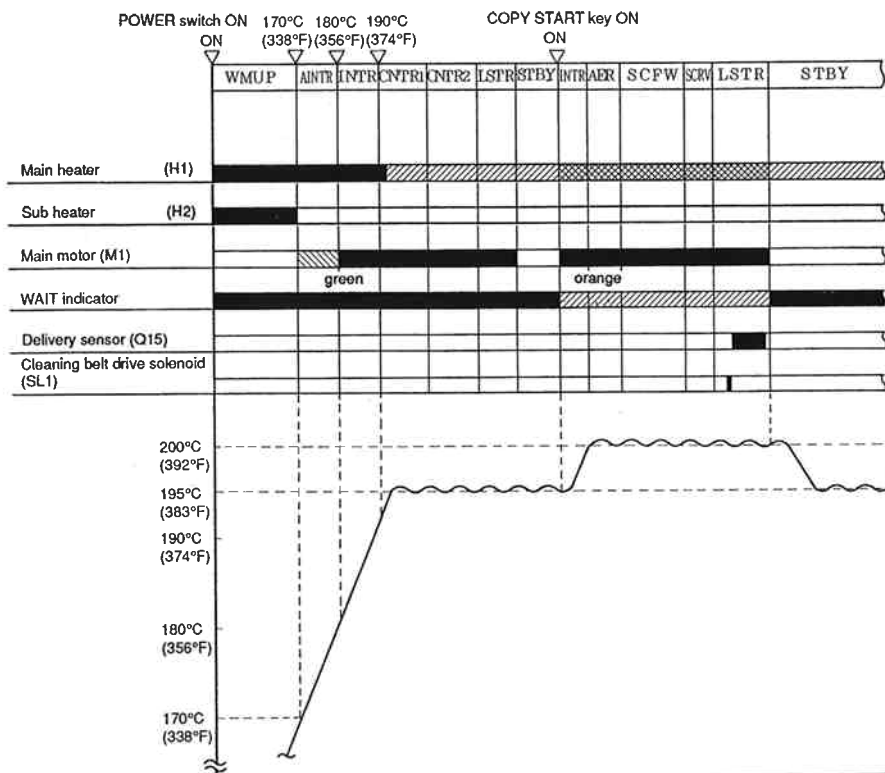
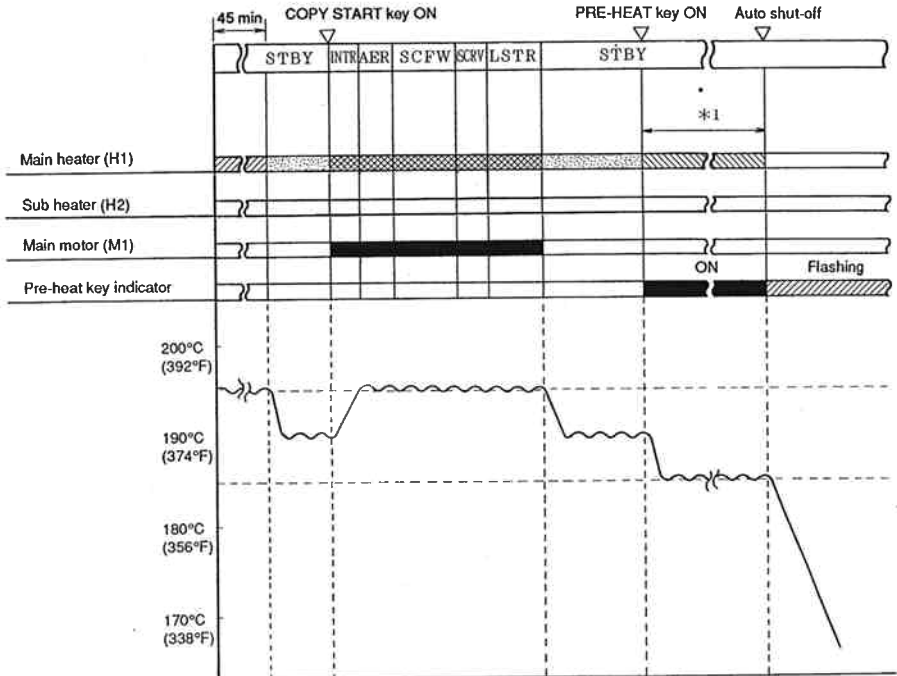


Figure 3-441

Sequence for Fixing Assembly (2/2)

- 45 minutes after power-on, pre-heat, and auto shut-off



* May be varied in the service mode.

Note:

The PRE-HEAT key also flashes when the auto shut-off mechanism goes ON without a press on PRE-HEAT key, i.e., without going through the pre-heat mode.

Figure 3-442

7. Locking Mechanism for Fixing Assembly

The fixing assembly is designed so that it may be slid out to the front.

If copy paper is present around the fixing assembly paper sensor (Q10) when the operation stops in response to a jam, the fixing assembly locking solenoid (SL16) is activated so that the fixing assembly cannot be slid out.

This is to prevent tearing of the copy paper that may have jammed over the fixing assembly and the delivery assembly.

Advise the user to open the delivery door to remove such a jam.

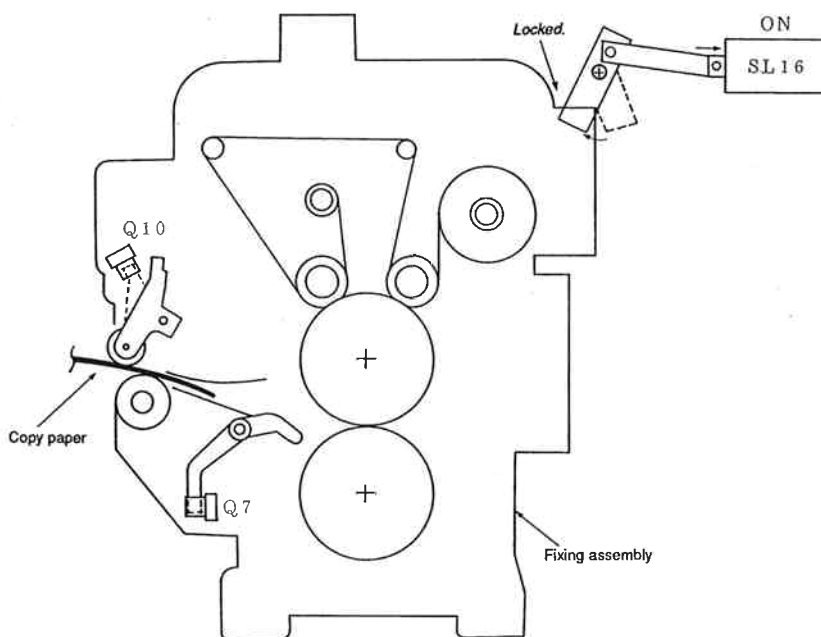


Figure 3-440

L. Error Detection Circuit

1. Outline

The error detection circuit is on the DC controller PCB and monitors the surface temperature of the upper fixing roller and the state of the fixing heater and the scanning lamp.

The ON detection circuit in the lamp regulator monitors the supply of power to the scanning lamp and the fixing heater; if they are supplied with power, it sends the respective ON detection signal (HRA, LAA) to the DC controller.

If the lamp is ON without the scanning lamp drive (ON) signal or if the surface temperature of the upper fixing roller rises abnormally, the error detection circuit generates the power switch OFF signal (PWOFF).

In response to the signal, the relay in the power supply switch is supplied with power, thereby causing the power switch to go OFF and cutting the AC power supply; this mechanism is called *auto power-off*.

The LED on the jam location indicator PCB starts to flash in response to the PWOFF signal.

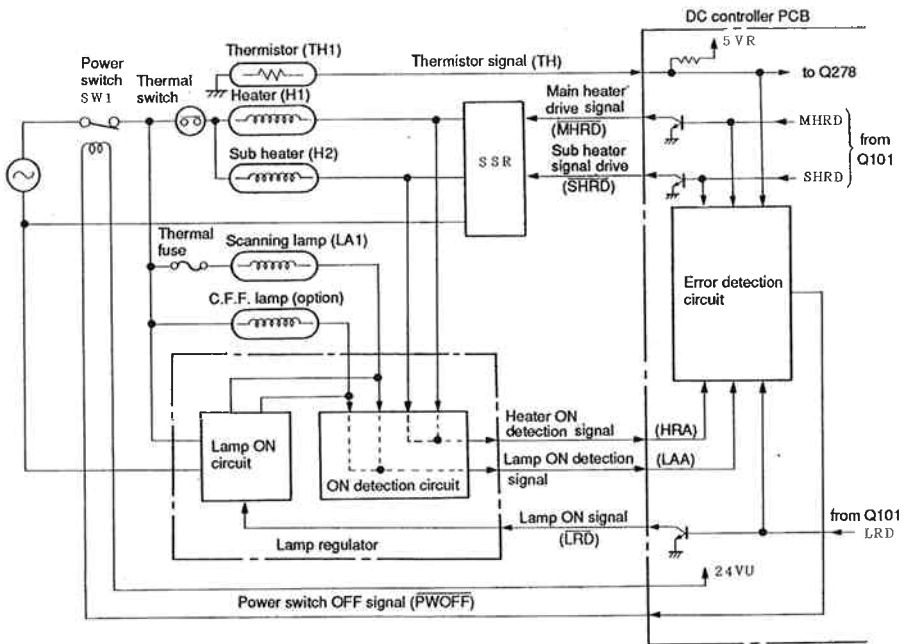


Figure 3-444 Wiring Diagram of Error Detection Circuit

	Condition 1	Condition 2	Condition 3
Thermistor signal (TH1)	0.87 V or less (230°C or more)	—	—
Scanning lamp ON signal (LRD)	—	"0"	—
Scanning lamp ON detection signal (LAA)	—	"1"	—
Main heater drive signal (MHRD)	—	—	"0"
Sub heater drive signal (SHRD)	—	—	"0"
Heater ON detection signal (HRA)	—	—	"1"
Main cause	• SSR fault • Thermistor shorted	• Lamp regulator triac triggering circuit shorted	• Heater drive circuit shorted (SSR) • Heater open

Table 3-404

- * For conditions 2 and 3, the error detection will be activated when any of them has lasted for about 5 seconds.

All causes attributed to the above must be removed; otherwise, the machine will go OFF again as soon as the power switch (SW1) is pressed.

M. Reversal/Delivery Mechanism

1. Outline

The reversal/delivery operation is limited to the following two copy modes; the purpose of the operation is to turn over the copy paper upon delivery so that it will be stacked in the correct sequence.

① skipping is executed for odd number of documents.

② C.F.F. is used.

a. Stack of Copy Sheets (no reversal, odd number of documents; at time of skipping)

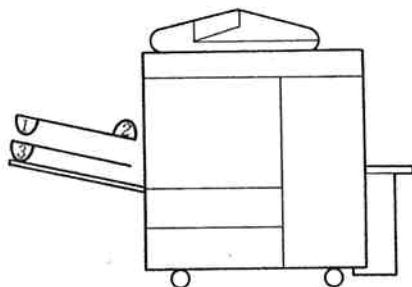


Figure 3-443 (a)

b. Stack of Copy Sheets (reversed, odd number of documents; at time of skipping)

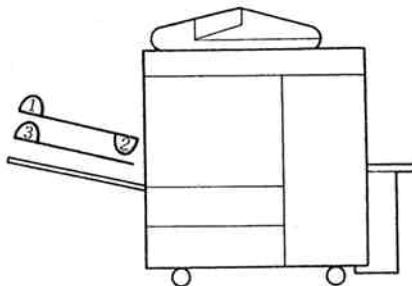


Figure 3-443 (b)

c. Stack of Copy Sheets (no reversal; with C.F.F. in use)

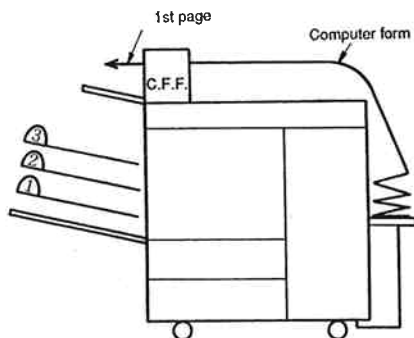


Figure 3-444 (c)

d. Stack of Copy Sheets (reversed, with C.F.F. in use)

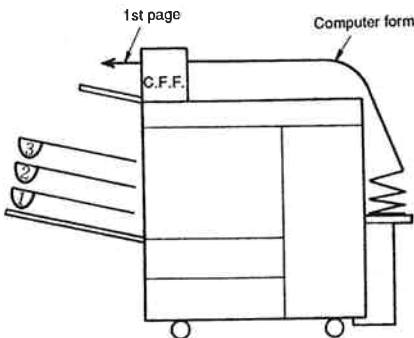


Figure 3-444 (d)

2. Reversal/Delivery Mechanism

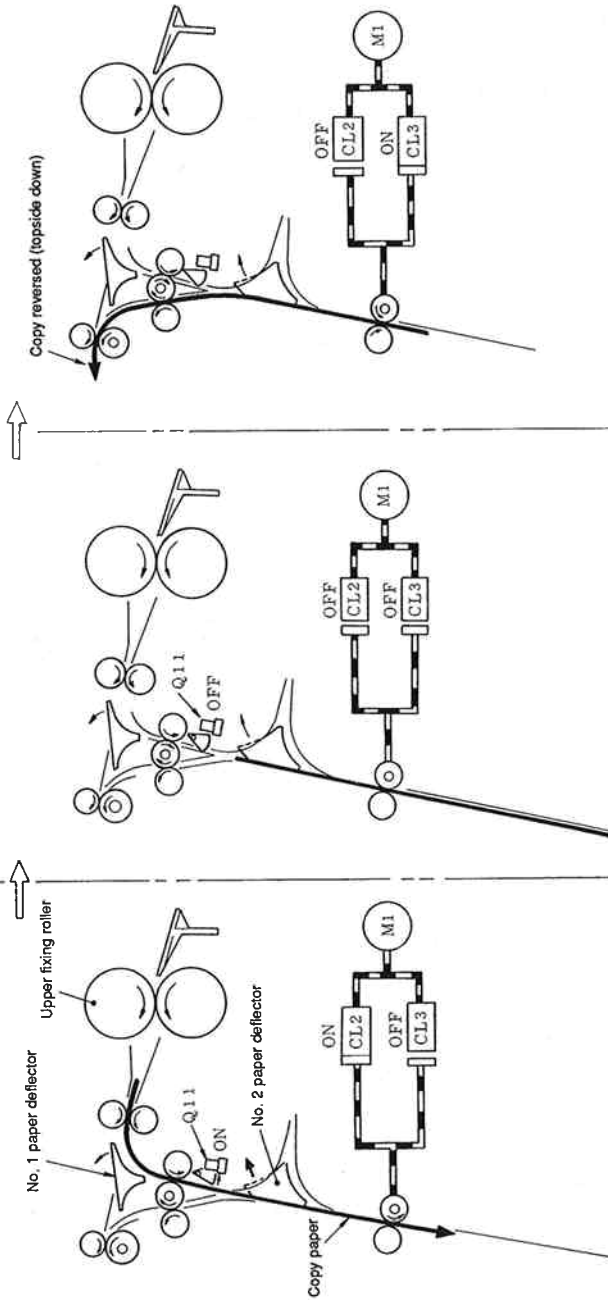


Figure 3-445 (a)

Figure 3-445 (b)

Figure 3-445 (c)

CL3 goes ON immediately after CL2 has gone OFF to deliver the copy paper.

After Q11 has gone OFF, CL2 goes OFF; the trailing edge of the copy paper has not moved past the No. 2 paper deflector.

The copy paper is sent through the paper path shown above by the No. 1 and No. 2 paper deflectors (Q11 is ON, CL2 is ON).

N. Checking for Jams

1. Outline

The machine is equipped with 14 sensors to check if the copy paper is fed properly; see Figure 3-446.

The microprocessor reads the signals from these sensors according to the instructions programmed in advance to identify a jam. The operation of the machine is stopped immediately upon detection of a jam.

After the operation is stopped, the JAM message is displayed on the control panel and, at the same time, the location of the jam is indicated.

When the machine is switched ON after removal of the jam, the copier goes through the same sequence as in normal power-on to be ready for a copy run.

The microprocessor identifies a jam under the following conditions:

a. Paper is present over any of the sensors at time of power-on, end of wait period, or during standby.

b. Paper does not reach the respective sensors within a specific period of time (delay jam).

- ① registration roller delay jam identified by pre-registration paper sensor (Q30)
- ② upper tray pick-up delay jam identified by upper pick-up/feed sensor (Q24)
- ③ lower tray pick-up delay jam identified by lower pick-up/feed sensor (Q23)
- ④ re-feed delay jam identified by re-feed paper sensor (Q26)
- ⑤ fixing feeder delay jam identified by fixing assembly sensor (Q10)
- ⑥ delivery paper delay jam identified by delivery sensor (Q15)
- ⑦ paper reversal delay jam identified by paper reversal sensor (Q11, Q13)
- ⑧ reversal delivery delay jam identified by reversal delivery sensor (Q14)
- ⑨ No. 2 feeder inlet delay jam identified by No. 2 feeder inlet jam (Q12)

c. Paper does not move past the respective sensors within a specific period of time.

- ① registration roller stationary jam identified by pre-registration paper sensor (Q30)
- ② upper tray pick-up stationary jam identified by upper pick-up/feed sensor (Q24)
- ③ lower tray pick-up stationary jam identified by lower pick-up/feed sensor (Q23)
- ④ re-feed stationary jam identified by re-feed sensor (Q26)
- ⑤ fixing assembly stationary jam identified by fixing assembly sensor (Q10)
- ⑥ delivery stationary jam identified by delivery sensor (Q15)
- ⑦ paper reversal stationary jam identified by paper reversal sensor (Q11, Q13)
- ⑧ reversal delivery stationary jam identified by reversal delivery sensor (Q14)
- ⑨ No. 2 feeder inlet stationary jam identified by No. 2 feeder inlet sensor (Q12)

Sensor	Name	Function	Sensor	Name	Function
Q7	Fixing assembly claw assembly paper sensor	Detects residual paper.	Q23	Lower pick-up/feeder assembly sensor	Detects delay/stationary jams.
Q10	Fixing assembly paper sensor	Detects delay/stationary jams.	Q24	Upper pick-up/feeder assembly sensor	Detects delay/stationary jams.
Q11	Reversing assembly inlet paper sensor	Detects delay/stationary jams.	Q26	Re-feed sensor	Detects delay/stationary jams.
Q12	No. 2 feeder assembly inlet sensor	Detects delay/stationary jams.	Q27	Holding tray paper sensor	Detects presence/absence of paper.
Q13	Reversing assembly paper sensor	Detects delay/stationary jams.	Q30	Pre-registration paper sensor	Detects delay/stationary jams.
Q14	Reversing assembly outlet paper sensor	Detects delay/stationary jams.	Q33	Re-feeder assembly sensor	Detects presence/absence of paper over holding tray and feed path.
Q15	Delivery assembly paper sensor	Detects delay/stationary jams.			
Q16	No. 2 feeder assembly outlet sensor	Detects residual paper.			

Table 3-405

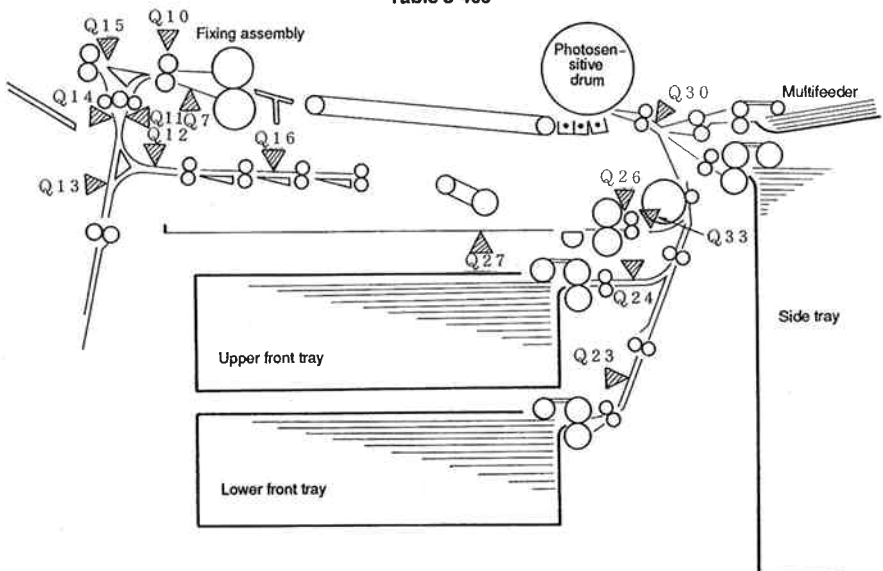


Figure 3-446

① Registration Roller Delay Jam

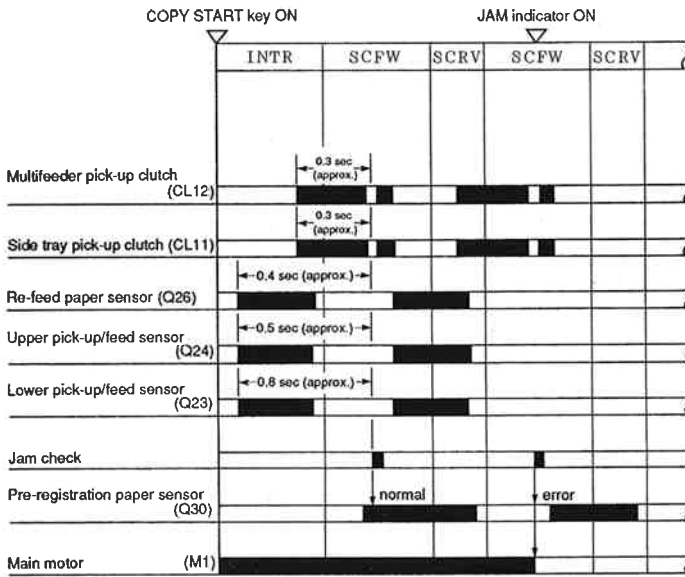


Figure 3-447

② Registration Roller Stationary Jam

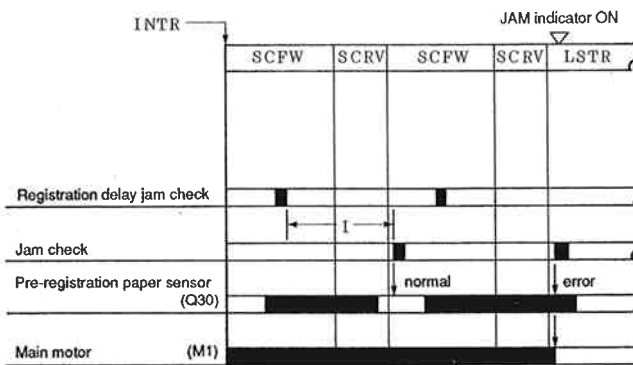


Figure 3-448

③ Upper Tray Pick-Up Delay Jam

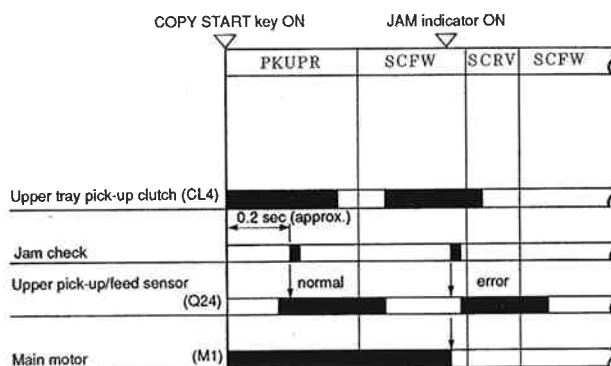
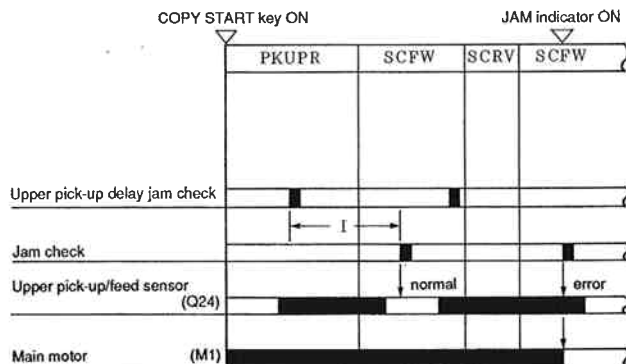


Figure 3-449

④ Upper Tray Pick-Up Stationary Jam



I: Varies depending on the length of copy paper.

Figure 3-450

⑤ Lower Tray Pick-Up Delay Jam

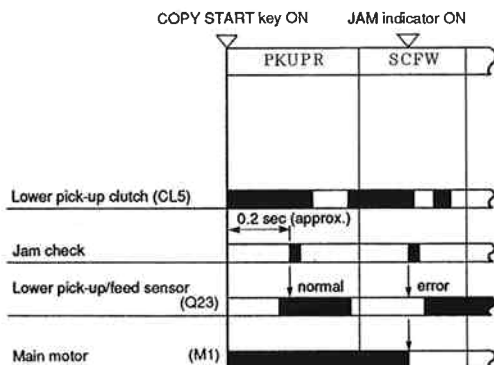
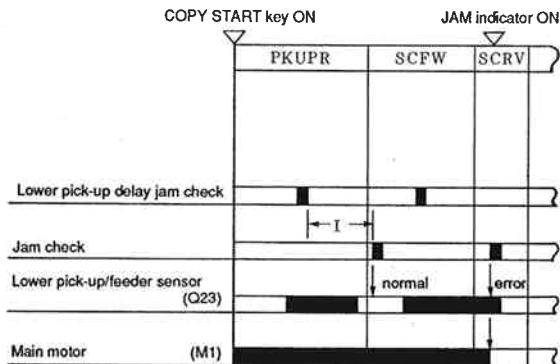


Figure 3-451

⑥ Lower Tray Pick-Up Stationary Jam



I: Varies depending on the length of copy paper.

Figure 3-452

⑦ Re-Feed Delay Jam

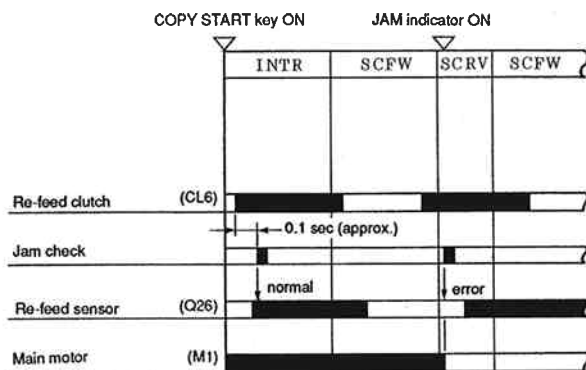
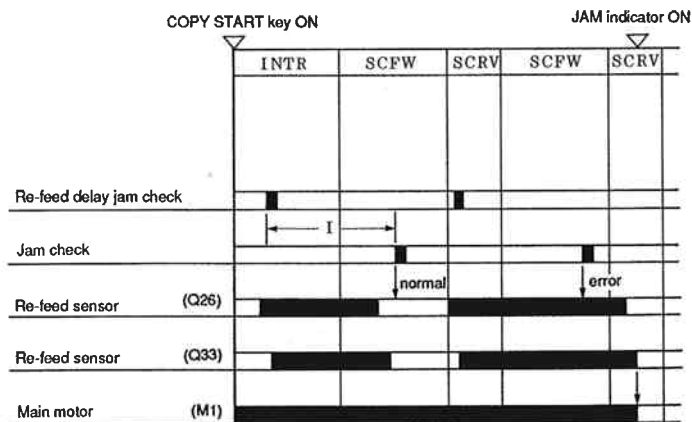


Figure 3-453

⑧ Re-Feed/Stationary Jam



I: Varies depending on the length of copy paper.
 * The main motor stops after the paper has moved past Q33.

Figure 3-454

⑨ Fixing Feed Delay Jam

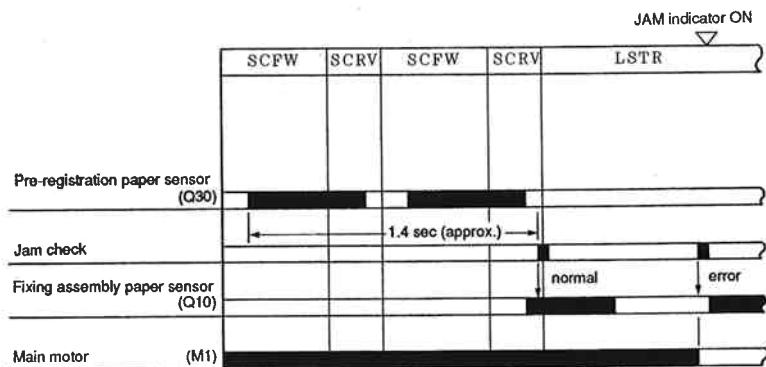
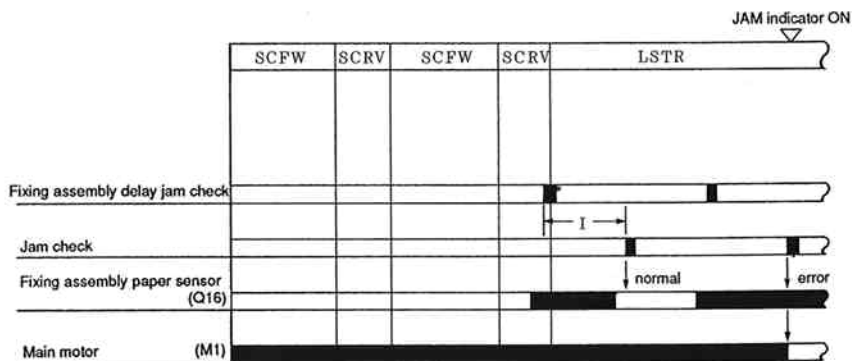


Figure 3-455

⑩ Fixing Feed Stationary Jam



I: Varies depending on the length of copy paper.

Figure 3-456

⑪ Delivery Delay Jam

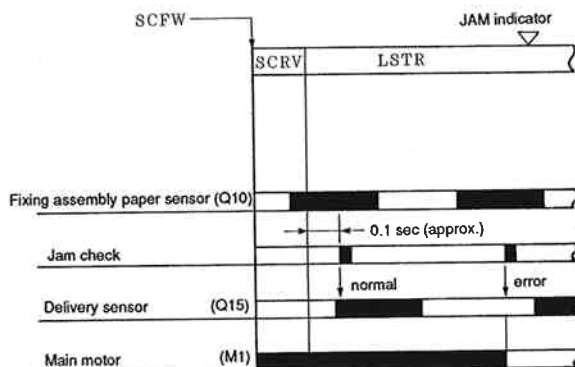
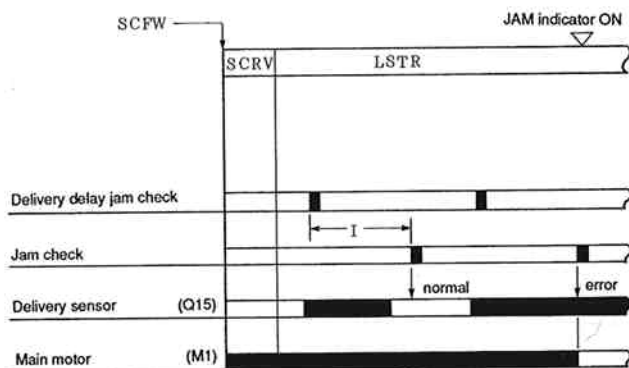


Figure 3-457

⑫ Delivery/Stationary Jam



I : Varies depending on the length of copy paper.

Figure 3-458

⑬ Paper Reversal Delay Jam

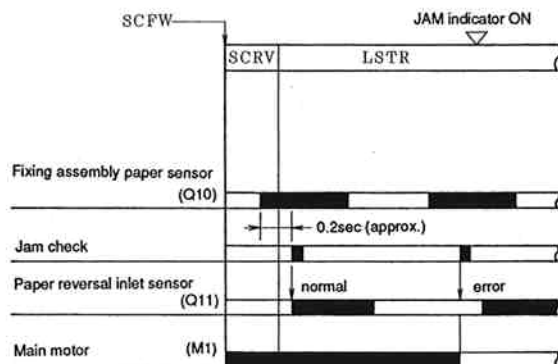


Figure 3-459 (a)

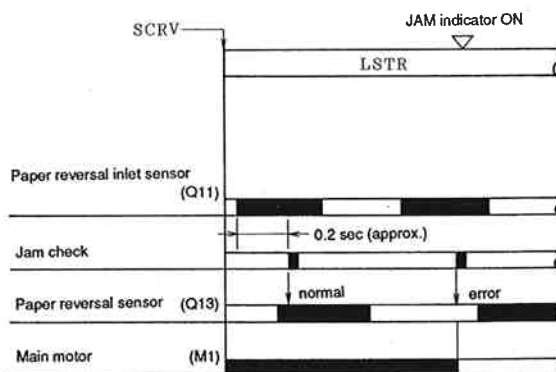
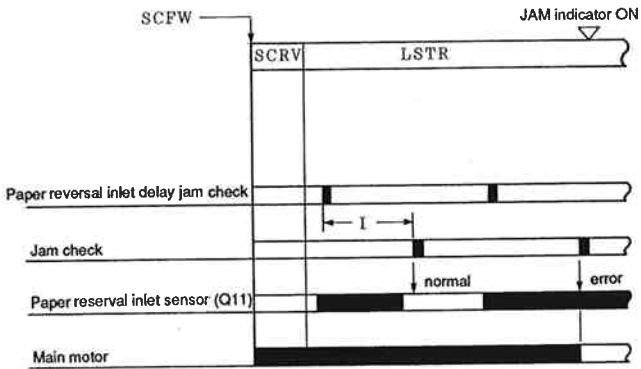


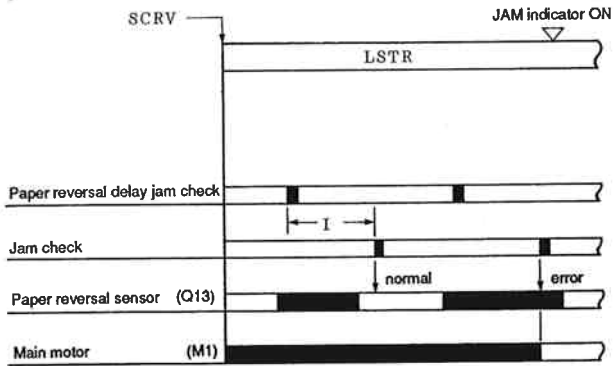
Figure 3-459 (b)

⑭ Paper Reversal Stationary Jam



I: Varies depending on the length of copy paper.

Figure 3-460 (a)



I: Varies depending on the length of copy paper.

Figure 3-460 (b)

⑮ Reversal Delivery Delay Jam

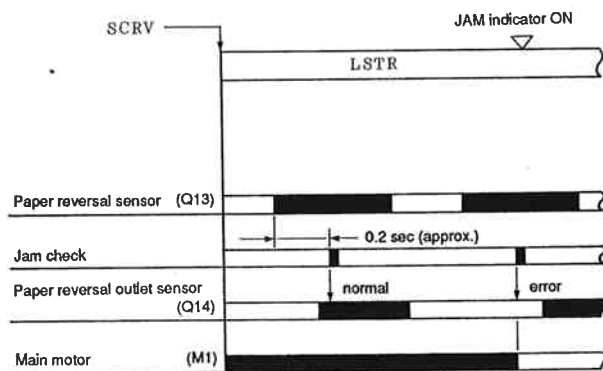
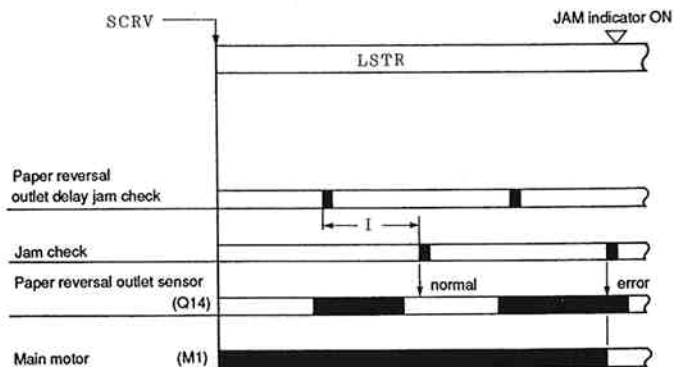


Figure 3-461

⑯ Reversal Delivery Stationary Jam



I: Varies depending on the length of copy paper.

Figure 3-462

⑦ No. 2 Feeder Inlet Delay Jam

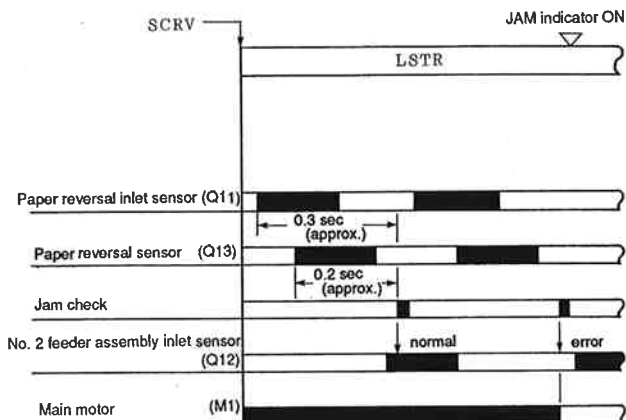
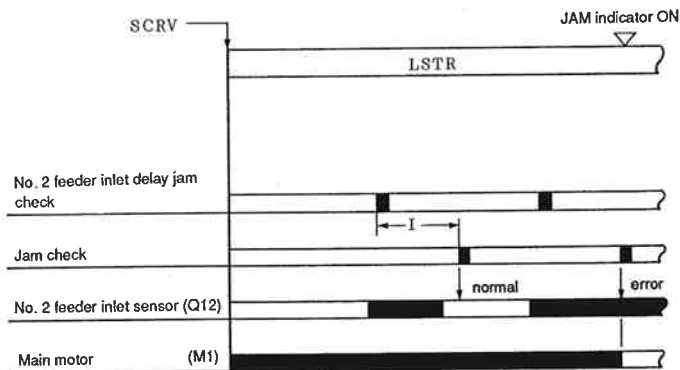


Figure 3-463

⑧ No. 2 Feeder Inlet Stationary Jam



I: Varies depending on the length of copy paper.

Figure 3-464

V. FANS

The machine is equipped with six fans to discharge ozone, collect stray toner, and cool the machine. Table 3-501 gives the function, mount

(filter), and flow of each fan. Figure 3-502 shows when each fan goes ON.

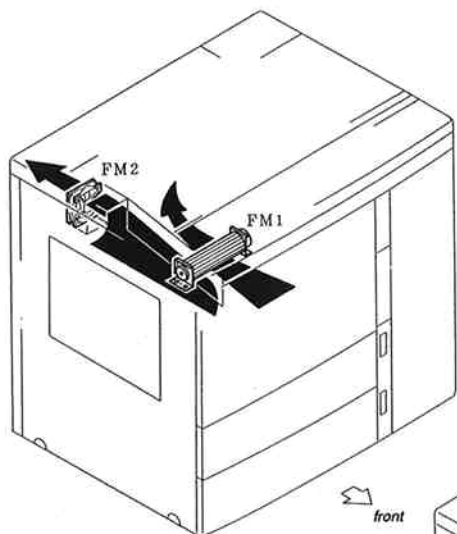


Figure 3-501 (a)

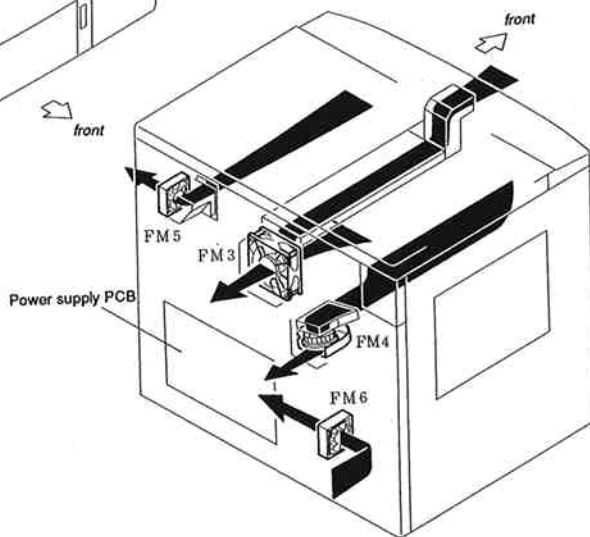
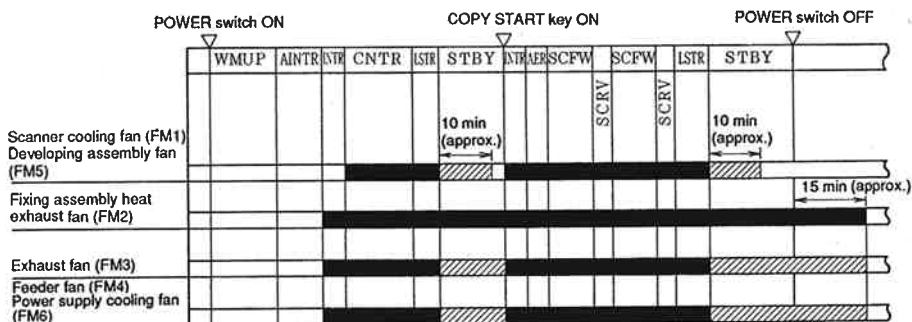


Figure 501 (b)

Fan	Name	Flow	Filter	Description
FM1	Scanner cooling fan	In	Air	Cools the scanner.
FM2	Fixing assembly heat exhaust fan	Out	Ozone, Air	- Prevents heating by fixing heater. - Discharges vapor from silicone oil.
FM3	Exhaust fan	Out	Ozone, Air	- Discharges ozone from the primary, pre-transfer, transfer, and separation corona assemblies. - Prevents collection of ozone by introducing outside air.
FM4	Feeder fan	Out	Ozone, Air	- Pulls copy paper from below the separation corona assembly to assist separation. - Keeps copy paper to the feeder belt.
FM5	Developing assembly fan	Out	Air	Collects stray toner from around the developing assembly.
FM6	Power supply cooling fan	In	—	Prevents heating by generating currents of air around the power supply PCB.

Table 3-501



Each fan continues to rotate even when the front door and/or the delivery door is opened.

- : high-speed rotation
- : low-speed rotation

Figure 3-502

VI. POWER SUPPLY

A. Outline

Figure 3-601 is a block diagram depicting the arrangement of the machine's power supplies.

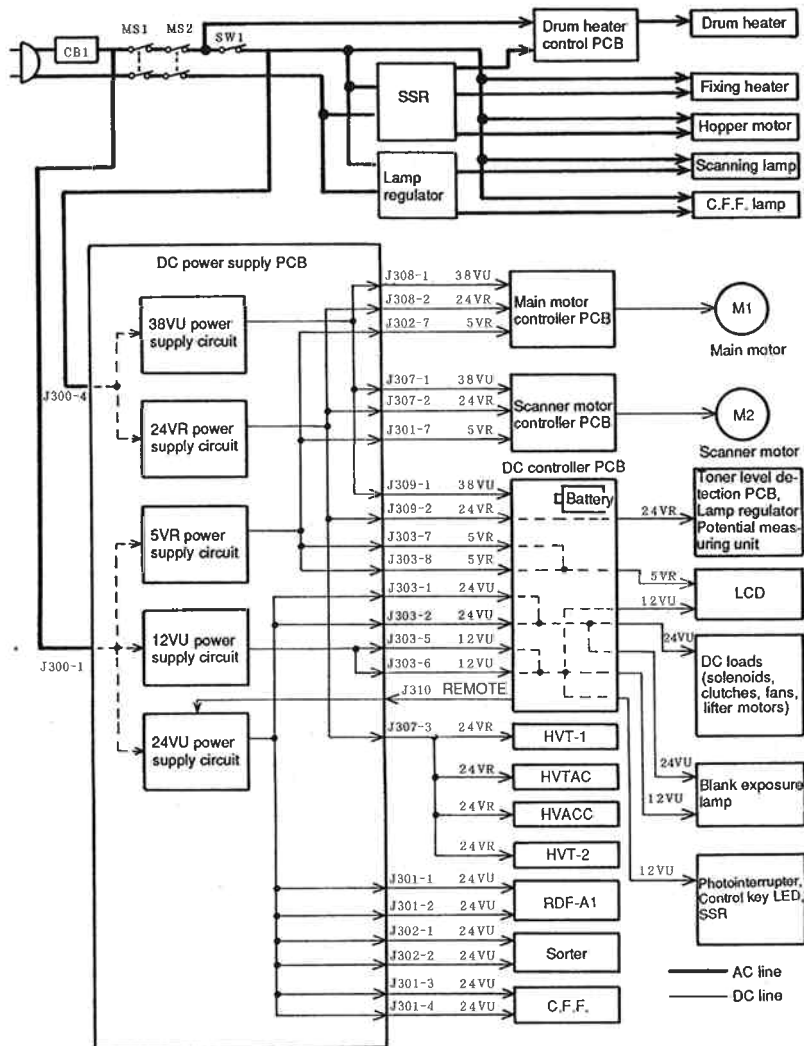


Figure 3-601

B. Power Supply Circuit

1. Outline

The machine's DC power supply PCB is capable of generating five DC outputs; i.e., 38 VU, 24VR, 24VU, 12VU and 5VR.

When the power plug is connected to the outlet, AC power flows into the 24VR, 12VU, and 5VR power supply PCBs on the power supply circuit. The AC power is then rectified, smoothed, and lowered into 12VU and 5VR outputs. The 24VU power is controlled by the remote signal from the DC controller PCB; and, at this point, no 24VU output is available.

When the power switch (SW1), door switch (MS2), and delivery assembly door switch (MS1) are turned ON, the AC power flows into the 38VU and 24VR power supply circuits on the PCB; then, the AC power is rectified, smoothed, and lowered into 38VU and 24VR outputs.

The DC controller PCB generates the remote signal (=0) and sends it to the power supply PCB; in response, the power supply PCB generates 24 VU. The remote signal ('0') is generated to maintain the 24VU output even if the door switch or the delivery assembly door switch is turned OFF at the time; in this case, the state (open/closed) of the door power will be monitored by the front door open/closed switch (SW3) and the delivery assembly door open/closed switch (SW2).

For this reason, 24 VU is generated regardless of the state (ON/OFF) of the power switch (SW1) when the front door or the delivery door is opened.

Make sure that SW1 is OFF and the connector to the copier is disconnected before working on the RDF, sorter, or C.F.F.

The 38VU, 24VU, and 12VU outputs are equipped with a voltage detection circuit to ensure stable outputs.

Type	Accuracy	Loads
38VU	38 V $\pm$ 5%	Main motor, Scanner motor
24VR	24 V $\pm$ 1%	HVT
24VU	24 V $\pm$ 5%	Clutch, Solenoid
12VU	12 V $\pm$ 5%	Photointerrupter, LED
5VR	5 V $\pm$ 1%	IC

Table 3-601

The values in Table 3-601 represent output accuracies at the rated input (AC power supply -15% , $+10\%$) and under normal temperature/humidity conditions.

The power supply PCB is equipped with a fuse on its AC power input side and with an overcurrent protection circuit on each switching regulator IC.

If an overcurrent flows because of a short in the power line, the protection circuit will be activated, causing the output of the power supply unit to go OFF. If this happens, disconnect the power plug, remove the cause of the problem, and switch the machine ON once again. The protection circuit may be reset by keeping the AC power supply OFF for about 30 seconds and then ON thereafter.

Note:

If an overcurrent flows into the output of the power supply unit, the protection circuit will go ON before the fuse on the AC input blows. The fuse may melt out if the AC power supply of the power unit is switched ON and OFF repeatedly without correcting the short in the output of the power unit.

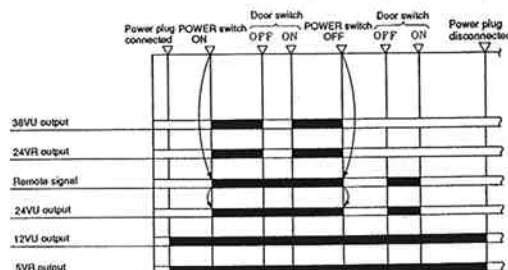


Figure 3-602

C. Power Supply for Date / Time Indicator

The machine is equipped with a lithium battery (on the DC controller) to serve as a back-up power supply to protect against loss of memory while the power plug is disconnected.

With the power plug disconnected, the lithium battery is expected to last for about five years. When the life of the battery is exhausted, the date and time indications remain still until the power plug is re-connected.

CAUTION

REPLACE THE LITHIUM BATTERY ONLY WITH THE ONE LISTED IN THE PARTS CATALOG.

USE OF A DIFFERENT BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.

THE BATTERY MAY PRESENT A FIRE OR CHEMICAL BURN HAZARD IF MISTREATED. DO NOT RECHARGE OR DISASSEMBLE IT OR DISPOSE OF IT IN FIRE. KEEP THE BATTERY OUT OF REACH OF CHILDREN AND DISCARD USED BATTERY PROMPTLY.

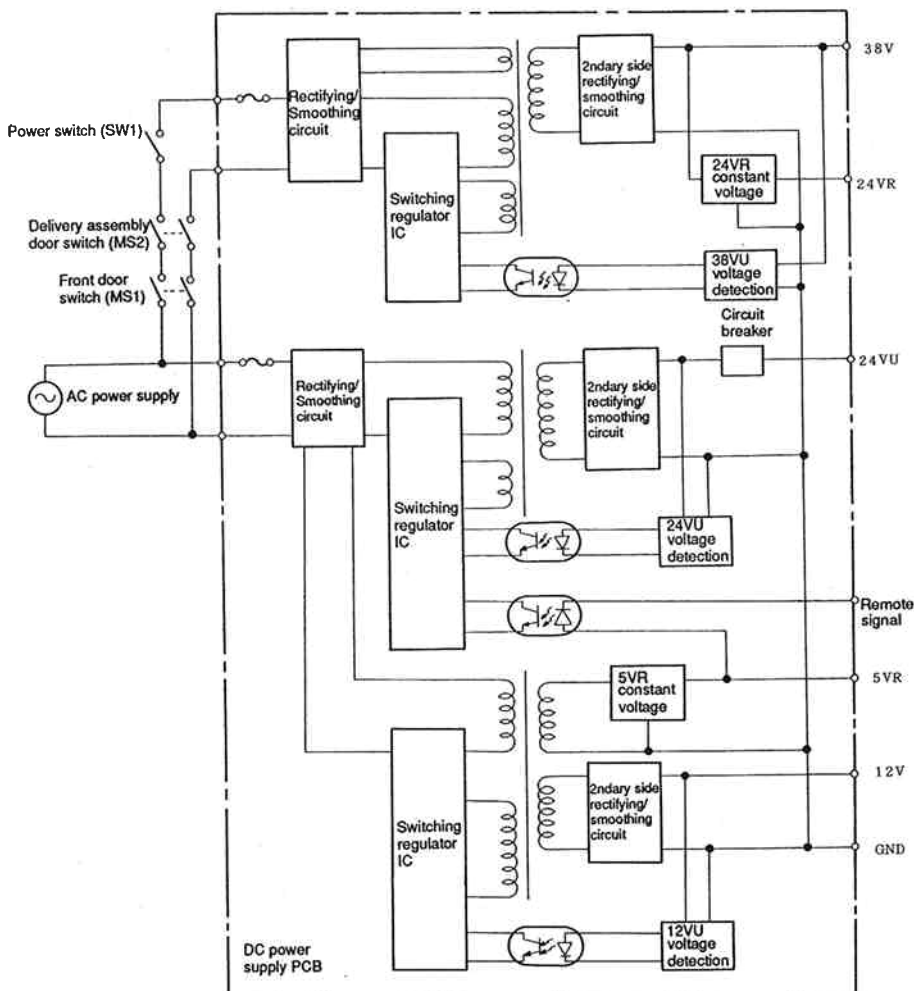


Figure 3-603 DC Power Supply Circuit (block diagram)

VII. COMPUTER FORM FEEDER (C.F.F.)

A. Outline

The computer form feeder (C.F.F.) is used to feed computer forms as large as 15" x 12".

The copier's scanner is kept still, and the document (form) is exposed while it is moved by the C.F.F.

Figure 3-701 shows the flow of signals between the machine and the C.F.F.

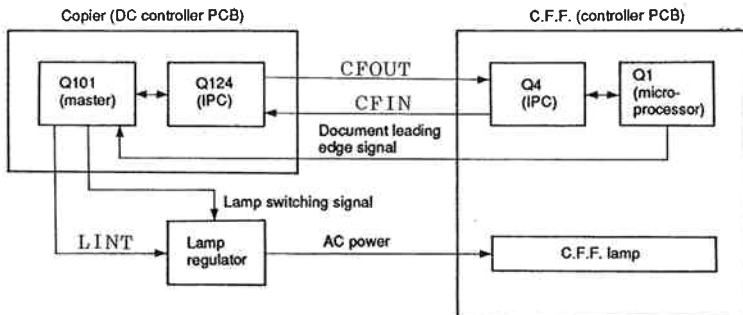


Figure 3-701

Signal	Description
CFOUT	Sent by the copier to the C.F.F. (data).
CFIN	Sent by the C.F.F. to the machine (data).
Document leading edge signal (CFLE)	Sent by the C.F.F. to the copier; copying operations are controlled based on this signal.

Table 3-701

B. Inputs to and Outputs from C.F.F. Controller

Inputs to and Outputs from C.F.F. Controller (1/2)

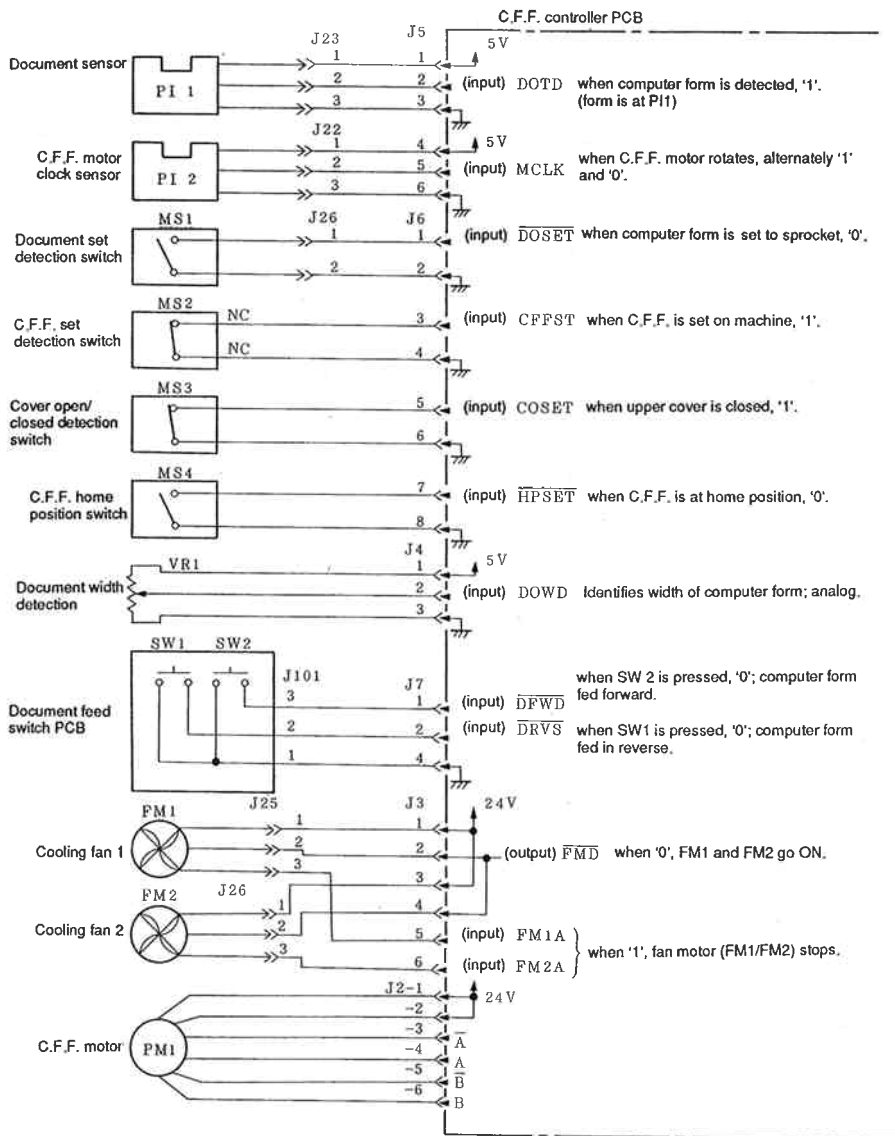


Figure 3-702

Inputs to and Outputs from C.F.F. (2/2)

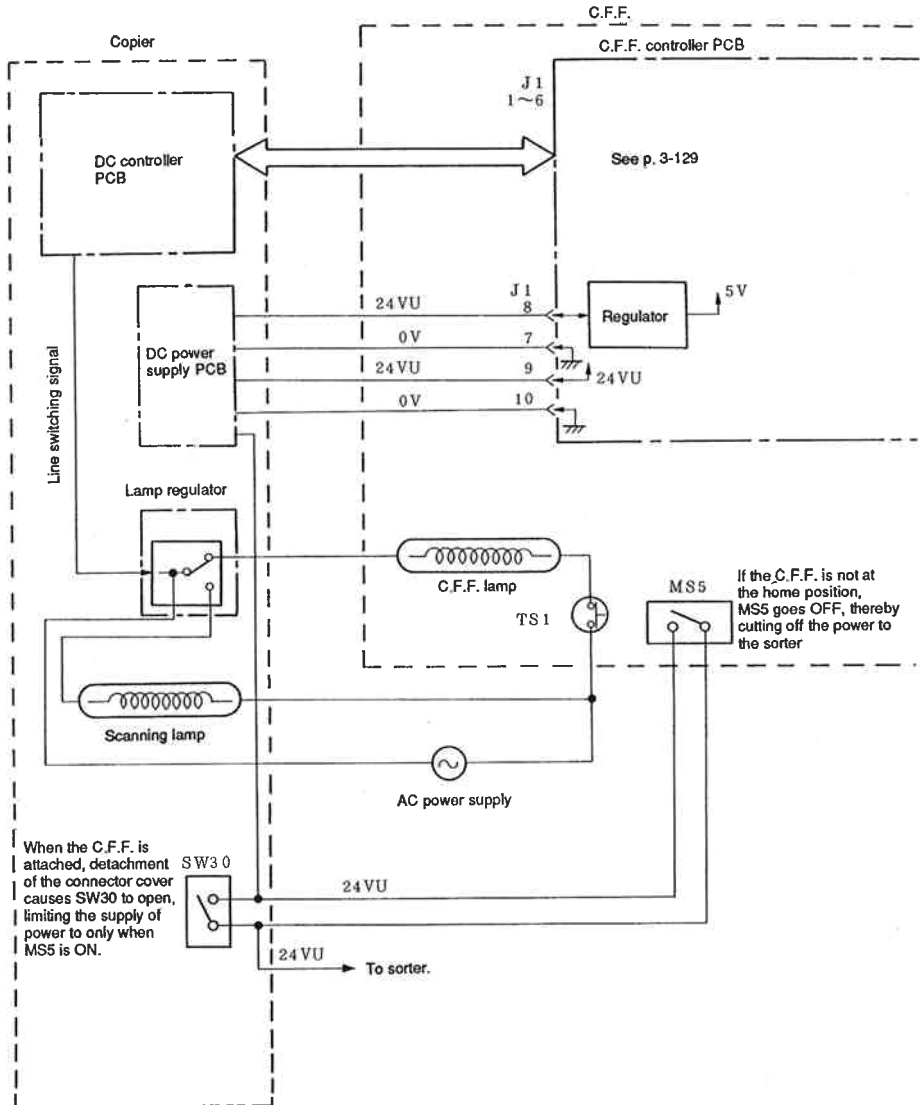


Figure 3-703

C. Operation

1. Outline

The drive used to feed computer forms comes from a stepping motor (PM1); the tractor and the delivery roller are moved by a drive belt.

The first 6 pages of the form are fed at low speed to *crease* the form; the speed is increased thereafter.

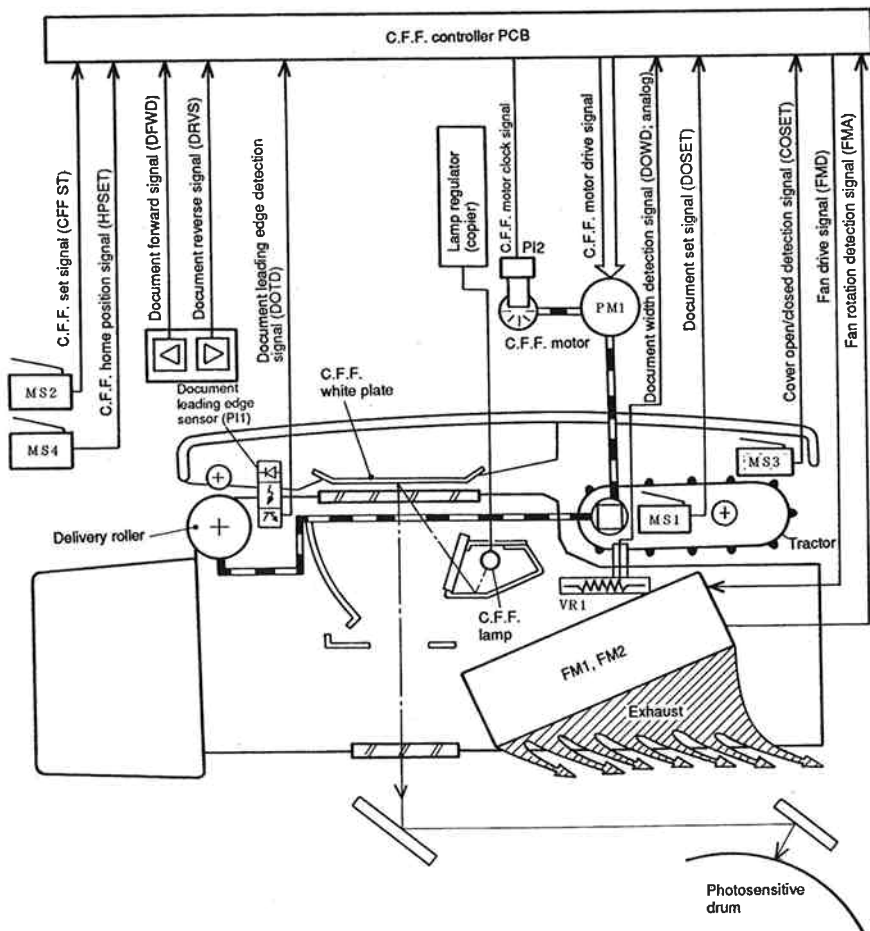


Figure 3-704

When a computer form is set on the C.F.F. and the COPY START key on the copier is pressed, the following operations take place:

The COPY START key (copier) is pressed; see Figure 3-705.

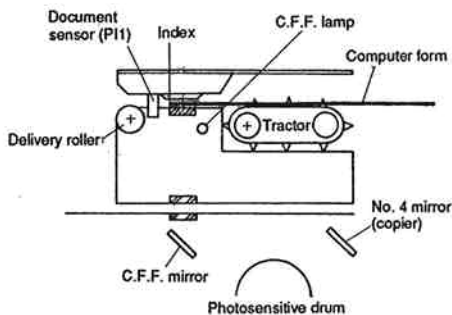


Figure 3-705

The stepping motor (C.F.F. motor; PM1) rotates forward to feed the computer form forward; see Figure 3-706.

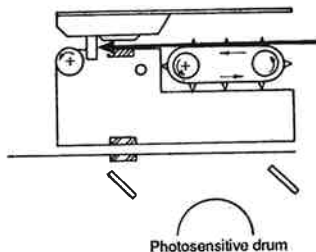


Figure 3-706

The document sensor (PI1) detects the computer form; the C.F.F. motor (PM1) rotates in reverse, causing the computer form to move in reverse and to stop without coming into contact with the white plate of the C.F.F.; see Figure 3-707. (PI as reference)

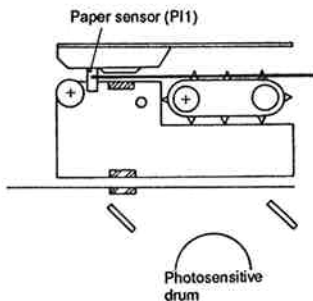


Figure 3-707 (a)

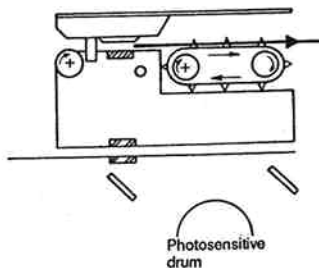


Figure 3-707 (b)

The C.F.F. white plate is exposed by the C.F.F. lamp to measure the potential; see Figure 3-708.



The C.F.F. motor (PM1) rotates forward to move the computer form until the document sensor (PI1) detects it; the C.F.F. motor stops after detection; see Figure 3-709.



The computer form is exposed by the C.F.F. lamp for AE measurement (p. 3-138); see Figure 3-710.



The C.F.F. motor (PM1) rotates in reverse to move the leading edge of the computer form in reverse, and the form is stopped for reading operation; see Figure 3-711.

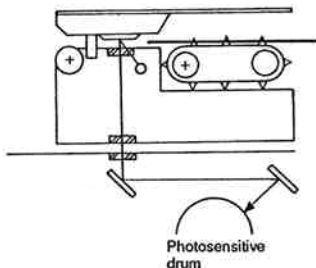


Figure 3-708

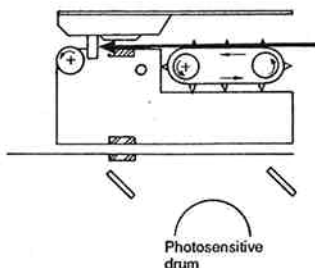


Figure 3-709

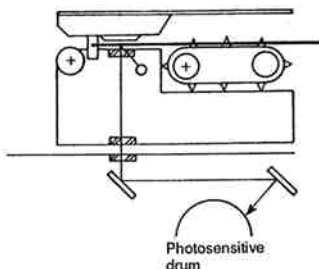


Figure 3-710

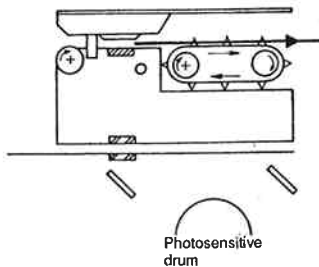


Figure 3-711

↓

The microprocessor of the C.F.F. sends the image leading edge signal to the copier, and the copier starts copying operation with reference to the signal; see Figure 3-712.

↓

After copying an area within two succeeding perforations (single page) of the computer form, the C.F.F. motor is rotated in reverse, thereby moving the computer form in reverse to prevent loss of the images near the perforations.

Thereafter, the second page is copied while the form is moved forward.

The images near the perforations are copied over two pages.

The above operation is repeated until the final page has been copied; see Figure 3-713.

The potential and AE measurements are taken for the first page of the computer form; they are not taken each time operations are started, e.g., after jam removal.

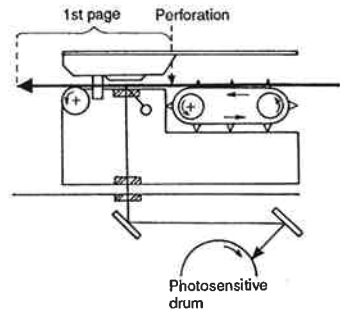


Figure 3-712

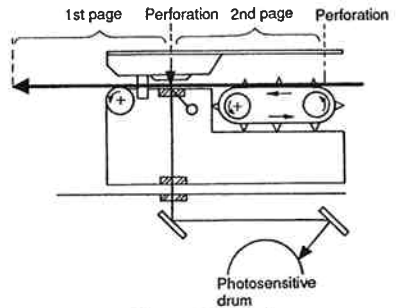


Figure 3-713 (a)

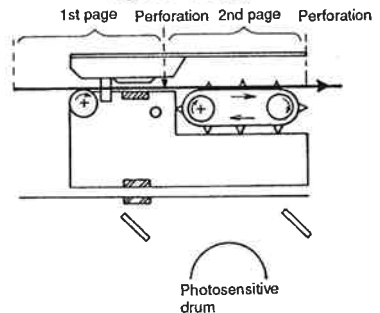


Figure 3-713 (b)

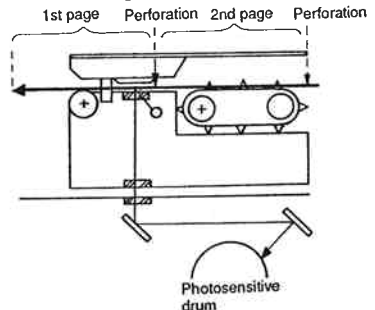


Figure 3-713 (c)

2. Sequence for C.F.F.

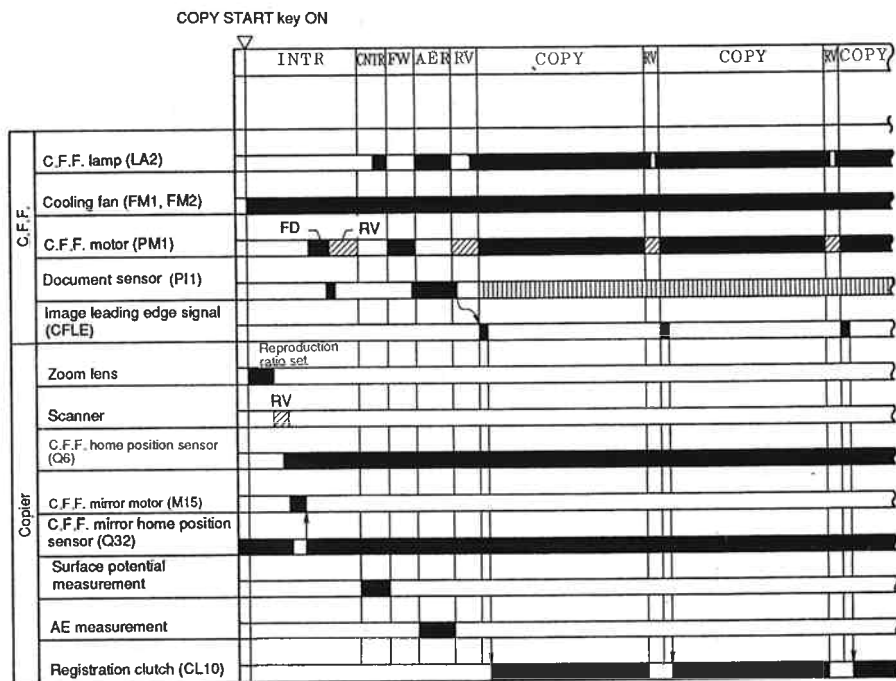


Figure 3-714

D. Optical Path with C.F.F. in Use

As mentioned, the machine reads the computer form while the C.F.F. feeds it.

When the C.F.F. is used, the copier's No. 1 and No. 2 mirror mounts are moved past their normal home positions and are positioned to the left (C.F.F. position); then, the C.F.F. mirror is moved to form the optical path for the C.F.F.

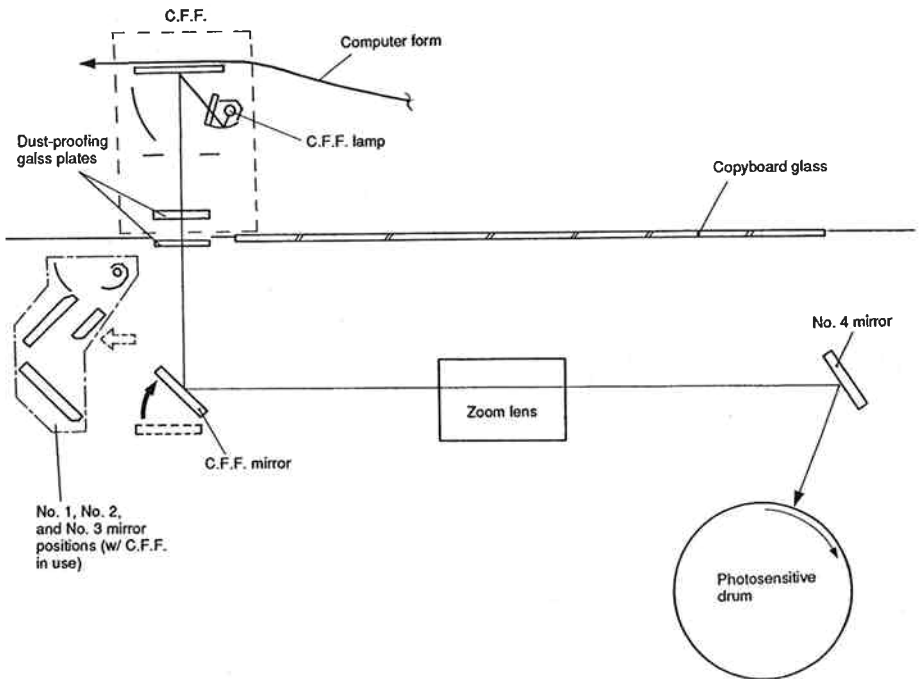


Figure 3-715

E. Automatic Exposure (AE) Control

The automatic exposure (AE) control mechanism is used to control the intensity of the C.F.F. lamp automatically to suit the density of the computer form. When the C.F.F. is used, the form is held stationary while the C.F.F. lamp (LA2) exposes its first page. During the exposure, the surface potential of the photosensitive drum is measured, and the measurements are sent to the DC controller PCB.

The DC controller PCB, in turn, decides the intensity of the C.F.F. lamp for copying operation based on these measurements.

The C.F.F. lamp is controlled by the lamp regulator of the copier; the relay circuit on the lamp regulator serves to switch the power between the scanning lamp and the C.F.F. lamp.

The intensity of the C.F.F. lamp is controlled by the intensity adjustment signal (LINT), which controls the copier's scanning lamp.

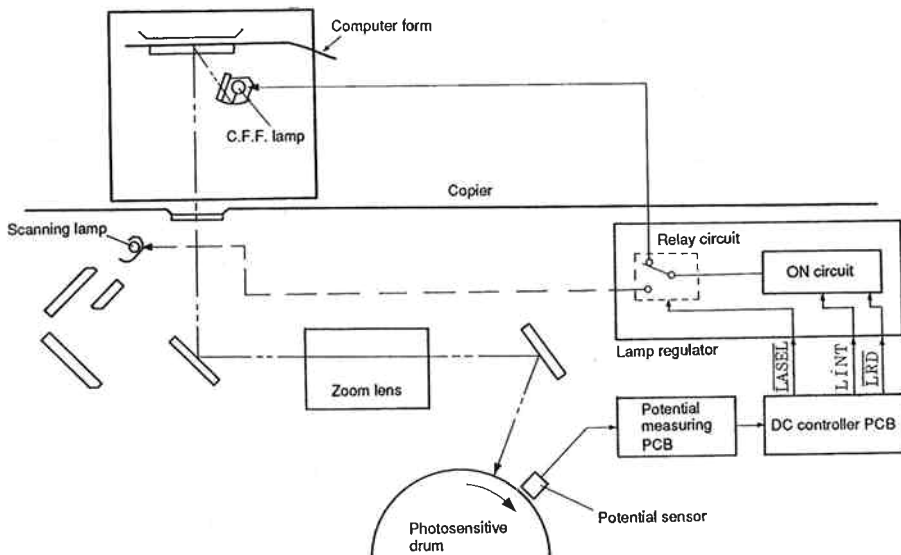


Figure 3-716

F. Auto Paper Selection

The tractor (front) of the C.F.F. may be moved to suit the width of computer forms.

The tractor has a variable resistor whose resistance changes in response to the position of the tractor, thereby identifying the width of the computer form.

The length of a single page of computer forms is identified by the number of holes along the edges of the forms; it is important to enter the correct number of holes using the copier's control panel.

These two measurements enable identification of the size of the document and, thereby, selection of correct paper size (A4/LTR or A4R/LTR-R).

G. Auto Reproduction Ratio Selection

The size of the copy paper is determined based on the size of a single page of each computer form.

With the auto reproduction ratio selection mechanism, the entire document area may be copied automatically on the selected copy paper at the highest possible reproduction ratio.

If the C.F.F. is used, however, the ratios will be between 64% and 100%.

The reproduction ratio across the drum is controlled by the lens, and that around the drum (document feed direction) is controlled by varying the speed at which the document is fed.

Note:

The reproduction ratios may be any number in 1% increments as long as it is between 64% and 100%.

The lens is controlled so that the image on the document is centered on the copy paper, i.e., in relation to the shaft of the drum.

Document width	Document length (holes)	Paper selected	Reproduction ratio selected
15 in.	11 in. (22)	A4 (LTR)	69% (71%)
14.7/8 in.	8.1/2 in. (17)	A4 (LTR)	79% (74%)
9 in.	11 in. (22)	A4R (LTR-R)	96% (94%)

H. Checking the Rotation of the Fans

The C.F.F. is equipped with two fans to discharge heat generated by the C.F.F. lamp.

These fans have built-in rotation signal output circuits which monitor the rotation of the fans by sending the rotation signal to the C.F.F. controller PCB.

If either of the two fans should stop (FM1A or FM2A signal, '1') or fails to rotate (FM1A or FM2A signal, '0'), the machine will be stopped and an error code (E442) will be displayed on the copier's control panel.

If such a problem occurs, remove the cause, and switch the copier OFF and then ON again.

The fans keep rotating for about five minutes after each copy operation, i.e., after C.F.F. completes operation.

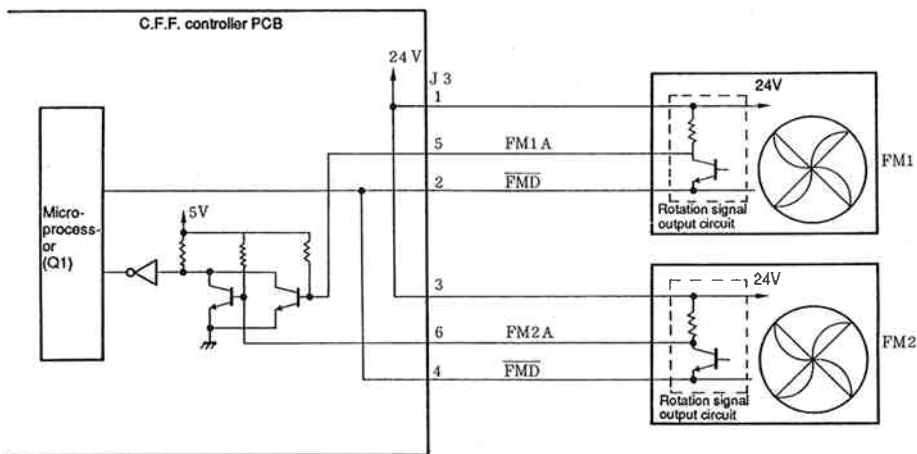


Figure 3-717

I. Checking the Paper Movement

The C.F.F. checks the number of holes in the computer form by its document sensor (PI1).

A computer form has holes punched at even intervals; taking advantage of this arrangement, the C.F.F. identifies a jam (document jam) when it does not detect holes at specific intervals when moving computer forms and stops the machine.

Although the C.F.F. checks every other hole in the computer form, the mechanism may be modified in service mode (*5*) so that it checks every other hole.

VIII. SERVICE MODE

A. Outline

The copier's service mode can be divided into seven types.

Item	Notation	Description
1	DISPLAY	control display mode
2	I/O DISPLAY	I/O display mode
3	ADJUST	adjustment mode
4	FUNCTION	operation/inspection mode
5	OPTION	machine settings mode
6	COUNTER	counter mode

Table 3-801

Each mode has a number of items that can be made use of in the field; the message display indicates the item selected at any given time.

B. Using the Service Mode

- 1) Open the front door, and insert the door switch actuator. To make checks under the I/O display mode while making copies, set the copy mode.
- 2) Press the service mode switch (SW503 on the jam indicator PCB) using a hex key.
 - The machine indicates '\$' at the upper left corner of the message display when it enters the service mode.

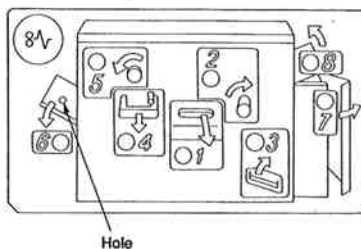


Figure 3-801 Jam Indicator PCB

- 3) Enter the No. of the mode (Table 3-801) to check or adjust using the $\boxed{[*]}$ key and the numeric keypad; for example, $\boxed{[*]}\boxed{3}$ and then $\boxed{[*]}$.
- 4) Press the down key or the up key to select the desired screen.
- 5) Make checks or adjustments.
- 6) Leave the service mode.
 - Press the RESET key once to leave the mode being used.
 - Press the RESET key twice to leave the service mode.
 - The machine will leave the service mode when it is switched OFF or its power plug is disconnected; opening the front door or the delivery door will not cause the machine to leave the service mode.

C. Using Adjustment Mode and Settings Mode

In the adjustment mode and the settings mode, the settings entered from the control panel will be stored in the RAM on the DC controller; these settings will serve the functions of conventional VRs and switches.

Figure 3-802 shows the label attached behind the machine's front left cover.

Each machine is individually adjusted at the factory, and the settings entered at the time are recorded on the label. Record any new settings entered in the field on this label.

Enter the settings on the label attached to the RAM on the DC controller PCB when the DC controller PCB has been replaced or the RAM has been initialized.

	TYP				TYP		
DRUM_SEL				SEP_1			
LIGHT_5H				SEP_2			
LIGHT_5L				MULT_SZ			
LIGHT5PH				CFFLIGHT			
LIGHT5PL				CFFAESLP			
AE_SLOP				CFF_RGST			
REGIST_H				GLEAM_5H			
REGIST_L				GLEAM_5L			
LE_BLANK				CFFGLEAM			
BRAKE_SC				ATM			
PRETRANS				RFAE_F5			
TRN_1				RFAE_F9			
TRN_2				BIAS_N			
				DOC_STOP			

Figure 3-802

D. Control Display Mode (1)

Select the desired screen using the down key and the up key.

* 1 * DISPLAY			
DPOT	:	430V	VAE : 200V
VL1T	:	180V	VL1M : 175V
			VL2M : 75V
VDT	:	450V	VDM : 460V

Screen 1-1

Item	Description	Remarks
DPOT	drum surface potential	unit: V
VL1T	VL1 (light area potential) target value	
VDT	VD (dark area potential) target value	
VAE	average surface potential during AE measurement	
VL1M	VL1 (light area potential) measured value	
VL2M	VL2 (light area potential for developing bias) measured value	
VDM	VD (dark area potential) measured value	

- Displays data for the C.F.F. when the C.F.F. is used.
- Displays data for the photo mode when in the photo mode.

* 1 * DISPLAY

LMP1 :	62.1V	PLMT :	1
LMP2 :	132.4V	LLMT :	0
		FTMP :	185°C
WIRE :	0	RTMP :	20°C

Screen 1-2

Item	Description	Remarks
LMP 1	scanning lamp ON voltage for 100/115V models	unit: V
LMP 2	scanning lamp ON voltage for 230V model	
WIRE	indicates '1' if the primary, pre-transfer, transfer, or separation corona wire cleaner stops at a point which is not the home position; see Note.	See Table 3-802.
PLMT	indicates '1' if the current value reaches the upper or lower limit when current control is executed on the primary corona assembly.	0: normal 1: error
LLMT	indicates '1' when the ON voltage of the scanning lamp reaches the upper or lower limit.	0: normal 1: error 2: error
FTMP	fixing assembly upper roller surface temperature (output of thermistor TH1)	unit: °C
PTMP	machine inside temperature (output of thermistor TH501)	unit: °C

- LMP1 and LMP2 indicate the ON control voltage even while the scanning lamp remains OFF.

Note:

- Execute wire cleaning ( ) in the asterisk mode (user mode) if '0' is not indicated for 'WIRE' because of an error in the corona wire cleaner.
If the wire cleaner motor and the wire cleaner unit are normal, execution of the above activates the cleaner unit, causing the cleaner to stop at the home position and, at the same time, changing the indication from '1' to '0'.
Unless the above is executed, the wire cleaning operation will be prohibited even after the copier has been switched OFF and then ON.
- If the reading of 'WIRE' is still '4' after the above, detach the transfer/separation corona wire, and execute  ; thereafter, make sure that the wire cleaner drive block is found at the front, and attach the corona assembly.

Display	Corona assembly w/ faulty cleaner
0	<i>normal</i>
1	primary corona assembly
2	pre-transfer corona assembly
3	primary or pre-transfer corona assembly
4	transfer corona assembly
5	primary or transfer corona assembly
6	pre-transfer or transfer corona assembly
7	primary, pre-transfer, or transfer corona assembly

Table 3-802

* 1 * DISPLAY

PC	:	1000 μ A	SC	:	100 μ A
PTC	:	-200 μ A	BIAS	:	180V
TC	:	800 μ A			

Screen 1-3

Item	Description	Remarks
PC	primary corona assembly current value	
PTC	pre-transfer corona assembly current value	
TC	transfer corona assembly current value	
SC	separation corona assembly current value	
BIAS	developing bias DC value	unit: V

- Indicates '0' when the HVT unit goes OFF.

※ 1 ※ DISPLAY

Q111	:	10.01.01	DF	:	01.00
Q112	:	10.01.01	SORT	:	01.00
Q278	:	10.01.01	CFF	:	01.00
Q280	:	11.01.01			

Screen 1-4

Version No.

Item	Description	Remarks
Q111 Q112	version No. of the ROM (Q111, Q112) on the DC controller PCB	See "Guide to Version No."
Q278	version No. of the microprocessor (slave) on the DC controller PCB	
Q280	version No. of the message ROM (Q280) on the DC controller PCB	
DF	version No. of the ROM on the controller PCB (RDF-A1)	
SORT	version No. of the ROM on the controller PCB (sorter)	
CFF	version No. of the ROM on the controller PCB (C.F.F.)	

Guide to Version No.

10 . 01 . 01

↑ ↑ ↑

software type version No. revision No. (for R&D)

* 1 * DISPLAY

B_JAM1	:	0000	B_ER1	:
B_JAM2	:	0010	B_ER2	:
B_JAM3	:	0800	B_ER3	:
F_JAM	:	0000		
S_JAM	:	0000		
CFF_JAM	:	0000		

Screen 1-5

Item	Description	Remarks
B_JAM1 B_JAM2 B_JAM3	indicates the location of jams in the copier. 1 represents the current; 2, previous; and 3, second previous. 'B_JAM1' resets to '000' upon removal of the jam	See Table 3-803.
F_JAM	indicates the location of jams in the RDF-A1	See Table 3-806.
S_JAM	indicates the location of jams in the sorter	See Table 3-804.
CFF_JAM	indicates the location of jams in the C.F.F.	See Table 3-805.
B_ER1 B_ER2 B_ER3	results of self diagnosis (copier; see p. 3-201) B_ER1: most recent B_ER2: 2nd most recent B_ER3: 3rd most recent	

No.	Description	Sensor
0001	delay jam, pick-up	Q23, Q24 Q26
0002	stationary jam, pick-up	
0004	delay jam, registration roller	
0008	stationary jam, registration roller	Q30
0010	delay jam, fixing assembly	Q10
0020	stationary jam, fixing assembly	
0040	delay jam, delivery	Q15
0080	stationary jam, delivery	
0100	delay jam, paper reversal inlet	Q11
0200	stationary jam, paper reversal inlet	
0400	delay jam, reversal delivery	Q14
0800	stationary jam, reversal delivery	
1000	delay jam, paper reversal	Q13
2000	stationary jam, paper reversal	
4000	delay jam, No. 2 feeder inlet	Q12
8000	stationary jam, No. 2 feeder inlet	

Table 3-803 Jams in Copier

No.	Description
03	delay jam, feeder
04	stationary jam, feeder
05	timing jam, feeder
06	staple jam, stapler
07	power-on jam
08	door open jam

Table 3-804 Jams in Sorter

No.	Description
01	delay jam, pick-up
02	feeding fault/document error
03	document trailing edge jam/feeder fault

Table 3-805 Jams in C.F.F.

- If two or more jams are detected at the same time, the fact is indicated in hexadecimal notation: for instance, 0E00 represents jams of 0200, 0400, and 0800.

No.	Description
01	document pulled out at time of RDF pick-up
02	delay jam, RDF pick-up sensor
03	delay jam, registration/skew sensor
04	leading edge skew jam at registration/skew sensor
05	stationary jam at registration/skew sensor
06	double feeding at registration/skew sensor
07	trailing edge skew jam at registration/skew sensor
08	document leading edge not detected by registration/skew sensor at time of RF pick-up
09	both registration and skew sensors not going ON
11	delay jam 1 at reversal sensor
12	stationary jam at reversal sensor
13	delay jam 2 at reversal sensor
20	initial stationary jam at reversal sensor
21	reversal pick-up delay jam at registration/skew sensor
22	reversal leading edge skew jam at registration/skew sensor
23	reversal pick-up stationary jam at registration/skew sensor
24	reversal trailing edge skew jam at registration/skew sensor
25	document leading edge not detected by registration/skew sensor at time of reversal pick-up
26	both registration and skew sensor not going ON at time of reversal/pick-up
41	delay jam at delivery sensor
42	stationary jam at delivery sensor
51	delivery delay jam in high-speed copy mode

No.	Description
52	delivery stationary jam in high-speed copy mode
81	RDF open
82	pick-up tray or upper cover open
83	delivered document not detected by document sensor
84	document detected by sensor at time of pick-up
85	jam unique to test mode
86	tray guide narrower than document being delivered
87	document double feeding (detection ON)
88	document detected at time of 1st document pick-up
89	recycle lever error at time of document circulation (2nd or later)
8A	faulty feeding (documents of mixed sizes)
A1	pick-up delay jam by sub registration sensor at time of sub feeder pick-up
A2	delay jam by delivery middle sensor (document fed in sub feeder)
A3	stationary jam by delivery middle sensor (document fed in sub feeder)
A4	delivery delay jam by sub registration sensor at time of document delivery to right feeder cover
A5	delivery stationary jam by sub registration sensor at time of document delivery to right feeder cover
B1	sub feeder error
B2	document set in sub feeder not if standard size
B3	document delivered to right feeder cover not of standard size
B4	document delivery mode error (to right feeder cover)

Table 3-806 Jams in RDF-A1

E. I/O Display Mode (✱ 2 ✱)

- Select the desired screen using the down and the up key.
- The display indicates the data for the input and output ports; one item per screen.

✱ 2 ✱ I/O DISPLAY

P001 : 15 10 5 0
 0 1 0 0 1 1 0 0 0 1 1 1 1 0 0 0 B

✱ 2 ✱ I/O DISPLAY

P028 : 74H

Address	bit	Description	Notation	Jack	Remarks
P001 (input)	0	lower pick-up/feeder sensor (Q23) signal	PDP9	J115-B4	1: paper present
	1	upper pick-up feeder sensor (Q24) signal	PDP10	J115-B7	1: paper present
	2	re-feeder sensor (Q26) signal	PDP11	J116-A5	1: paper present
	3	pre-registration paper sensor (Q30) signal	PDP13	J118-A2	1: paper present
	4	fixing separation claw assembly paper sensor (Q7) signal	PDP1	J103-A6	0: paper present
	5	fixing assembly paper sensor (Q10)	PDP2	J103-A12	0: paper present
	6	delivery sensor (Q15) signal	PDP7	J117-A14	0: paper present
	7	paper reversal inlet sensor (Q11) signal	PDP3	J102-A5	1: paper present
	8	paper reversal outlet sensor (Q14) signal	PDP6	J117-A11	1: paper present
	9	paper reversal sensor (Q13) signal	PDP5	J117-A8	1: paper present
	10	No. 2 feeder assembly inlet sensor (Q12) signal	PDP4	J102-A2	1: paper present
	11	No. 2 feeder assembly outlet sensor (Q16) signal	PDP8	J117-B11	1: paper present
	12	hopper toner sensor (Q31) signal	TEP	J103-B2	0: toner absent
	13	reserved			
	14	power switch ON sensor	—	—	0: power switch ON
	15	PCB internal signal	—	—	
P002 (output)	0	lower pick-up clutch (CL5) drive signal	LRUCD	J115-B9	1: CL5 ON
	1	lower pick-up roller release solenoid (SL15) drive signal	LPRSD	J114-A1	1: SL15 ON
	2	upper pick-up clutch (CL4) drive signal	UPUCD	J115-B11	1: CL4 ON
	3	feeder roller clutch (CL9) drive signal	FEDCD	J114-B5	1: CL9 ON
	4	side tray pick-up roller release solenoid (SL7) drive signal	PRSD	J113-B14	1: SL7 ON
	5	side tray pick-up clutch (CL11) drive signal	STPCD	J118-A4	1: CL11 ON
	6	multi pick-up roller lock solenoid (SL14) drive solenoid	MFPSD	J118-B8	1: SL14 ON
	7	multi pick-up clutch (CL12) drive signal	MFPCD	J118-B10	1: CL12 ON
	8	paper sub feeder roller down solenoid (SL10) drive signal	DPISD	J116-A2	1: SL10 ON
	9	re-feeder roller drive solenoid (SL9) drive signal	DPSD	J116-A1	1: SL9 ON

Address	bit	Description	Notation	Jack	Remarks
P002 (output)	10	re-feed clutch (CL6) drive signal	DUPCD	J116-B8	1: CL6 ON
	11	re-feed assembly release solenoid (SL8) drive signal	DPSSD	J116-B9	1: SL8 ON
	12	cleaning belt drive solenoid (SL1) drive signal	CLBSD	J103-A3	1: SL1 ON
	13	switch-back FD clutch (CL2) drive signal	SBFCD	J103-B10	1: CL2 ON
	14	switch-back RV clutch (CL3) drive signal	SBRCd	J103-B8	1: CL3 ON
	15	PCB internal signal	—	—	
P003 (output)	0	oscillation signal 0	—	J109-B10	
	1	oscillation signal 1	—	J109-B9	
	2	oscillation signal 2	—	J109-B8	
	3	oscillation signal 3	—	—	
	4	oscillation signal 4	—	J120-B6	
	5	oscillation signal 5	—	J120-B7	
	6	CFF mirror motor (M15) drive signal (down)	—	J110-A14	1: M15 ON (up)
	7	CFF mirror motor (M15) drive signal (up)	—	J110-A15	1: M15 ON (up)
	8	primary corona wire cleaning motor (M6) reverse drive signal	M6RV	J105-B1	1: M6 ON (reverse)
	9	primary corona wire cleaning motor (M6) forward drive signal	M6FU	J105-B2	1: M6 ON (forward)
	10	pre-transfer corona wire cleaning motor (M7) forward drive signal	M7FU	J105-A6	1: M7 ON (forward)
	11	pre-transfer corona wire cleaning motor (M7) reverse drive signal	M7RV	J105-A7	1: M7 ON (reverse)
	12	transfer/separation corona wire cleaning motor (M8) reverse drive signal	M8RV	J113-A8	1: M8 ON (reverse)
	13	transfer/separation corona wire cleaning motor (M8) forward drive signal	M8FU	J113-A9	1: M8 ON (forward)
	14	lamp regulator drive signal	LRD	J102-B13	1: ON
	15	lamp switching signal	LASEL	J102-B10	1: switch to CFF lamp
P004 (input)	0	lower front tray paper sensor (Q20) signal	LTPE	J115-A5	1: paper absent
	1	upper front tray paper sensor (Q22) signal	UTPE	J115-A11	1: paper absent
	2	holding tray paper sensor (Q27) signal	PDP12	J116-A8	1: paper present
	3	side tray paper sensor (Q18) signal	STPE	J113-B8	1: paper absent

Address	bit	Description	Notation	Jack	Remarks
P004 (input)	4	multifeeder paper sensor (Q29) signal	MFS	J118-B6	1: paper present
	5	multifeeder tray open switch (SW21) signal	MFO	J118-B4	1: open
	6	upper tray lifter upper limit switch (SW16) signal	UTLU	J114-B13	0: lifter at upper limit
	7	upper tray lifter lower limit switch (SW17) signal	UTLL	J114-B11	0: lifter at lower limit
	8	re-feed sensor (Q33) signal	PDP14	J115-B2	1: paper present
	9	lower tray lifter upper limit switch (SW18) signal	LTLU	J114-B9	0: lifter at upper limit
	10	lower tray lifter lower limit switch (SW19) signal	LTLL	J114-B7	0: lifter at lower limit
	11	PCB internal signal	—	—	
	12	side tray door open/closed switch (SW12)	STDO	J113-B6	1: open
	13	scanner home position sensor (Q5) signal	SCHP	J102-B5	1: home position
	14	CFF position sensor (Q6) signal	SCFFP	J102-B2	1: CFF home position
	15	CFF mirror position sensor (Q32) signal	MHP	J110-A12	1: home position
P005 (output)	0	roller electrode bias ON signal	ROED	J101-B8	1: ON
	1	pre-transfer/separation corona AC component ON signal	ACON	J101-B11	1: ON
	2	developing bias AC component ON signal	ACBTC	J101-B6	1: ON
	3	hopper motor drive signal	HMD	J113-A4	1: ON
	4	developing clutch (CL1) drive signal	DULD	J103-B12	1: CL1 ON
	5	buzzer ON	—	J107-A6	
	6	watchdog drive	—	—	
	7	potential control LED	—	—	
	8	upper tray lifter up/down switch signal	—	—	1: down, 0: up
	9	lower tray lifter up/down switch signal	—	—	1: down, 0: up
	10	upper tray drive	—	—	
	11	lower tray release solenoid (SL13) drive signal	LTRSD	J114-A7	1: SL13 ON
	12	PCB internal signal	—	—	
	13	upper tray release solenoid (SL12) drive signal	UTRSD	J114-A9	1: SL12 ON
	14	side tray lifter down	—	—	1: down, 0: up
	15	reserved	—	—	

Address	bit	Description	Notation	Jack	Remarks
P006 (output)	0	blank exposure control signal 0	—	—	
	1	blank exposure control signal 1	—	—	
	2	holding tray control	—	—	
	3	upper tray open switch LED ON signal	UTLD	J104-B1	1: ON
	4	lower tray open switch LED ON signal	LTLD	J104-B5	1 ON
	5	back-up RAM error clear	—	—	
	6	Q278 communication signal	—	—	
	7	control panel communication signal	—	—	
	8	main motor (M1) drive signal	MMD	J117-B13	1: M1 ON
	9	scanner motor (M2) drive signal	SCMD	J102-A9	1: M2 ON
	10	scanner forward signal	SCFW	J102-A10	1: forward
	11	repro ratio select signal 0	SCRC0	J102-A13	
	12	repro ratio select signal 1	SCRC1	J102-A12	
	13	repro ratio select signal 2	SCRC2	J102-A11	
	14	scanner speed control signal	SCSC	J102-A7	
	15	scanner stop signal	SCST	J102-A8	0: stop
P007 (input)	0	reserved	—	J120-A1	
	1	reserved	—	J120-A2	
	2	reserved	—	J120-A3	
	3	reserved	—	J120-A4	
	4	reserved	—	J120-A5	
	5	reserved	—	J120-A6	
	6	reserved	—	J120-A7	
	7	reserved	—	J120-A8	
	8	key counter connection signal	—	J105-B8	0: connected
	9	control card connection signal	CCNNT	J104-A1	1: connected
	10	reserve control card connection signal	—	J101-A6	0: connected
	11	duplexing unit connection signal	—	J117-B2	1: connected
	12	counter error	—	—	1: error
	13	reserved	—	—	
	14	slave communication ack	—	—	
	15	slave control panel communication ack	—	—	

Address	bit	Description	Notation	Jack	Remarks
P008 (output)	0	No. 1 paper deflector plate drive solenoid (SL3) drive signal	$\overline{\text{DSD1}}$	J117-A5	1: SL3 ON
	1	No. 2 paper deflector plate drive solenoid (SL2) drive signal	$\overline{\text{DSD2}}$	J117-A3	1: SL2 ON
	2	S size paper detector drive solenoid (SL4) drive signal (12V)	SDSD	J117-B5	1: SL4 ON
	3	S size paper deflector plate drive solenoid (SL4) drive signal (24V)	SDSD	J117-B5	1: SL4 ON
	4	M size paper deflector plate drive solenoid (SL5) drive signal (12V)	MDSD	J117-B7	1: SL5 ON
	5	M size paper deflector plate drive solenoid (SL5) drive signal (24V)	MDSD	J117-B7	1: SL5 ON
	6	L size paper deflector plate drive solenoid (SL6) drive signal (12V)	LDSD	J117-B9	1: SL6 ON
	7	L size paper deflector drive solenoid (SL6) drive signal (24V)	LDSD	J117-B9	1: SL6 ON
	8	registration roller clutch (CL10) drive signal (ON)	$\overline{\text{RGCD}}$	J114-B3	0: CL10 ON
	9	registration roller clutch (CL10) drive signal (OFF)	RGCD	J114-B3	0: CL10 OFF
	10	key counter drive	—	J105-B7	1: ON
	11	control card drive signal	$\overline{\text{CCNTD}}$	J104-A2	1: ON
	12	control card drive signal (sub feeder side)	$\overline{\text{CCNTD}}$	J101-A7	1: ON
	13	total copy counter drive signal	$\overline{\text{TCNTD}}$	J110-A3	1: ON
	14	small coy counter drive signal	$\overline{\text{SCNTD}}$	J110-A1	1: ON
	15	power indicator lamp drive signal	—	J107-A5	1: ON
P009 (output)	0	scanner cooling fan (FM1) low speed drive signal	FM1H	J105-B9	1: low speed
	1	scanner cooling fan (FM1) high-speed drive signal	FM1L	J105-B9	1: high speed
	2	heat exhaust fan (FM2), delivery fan (FM3), feeder fan (FM4), developing fan (FM5), power supply cooling fan (FM6) low speed drive signal	FMDL	J103-B5 J114-A13	1: low speed
	3	fixing heat exhaust fan (FM2), heat exhaust fan (FM3), feeder fan (FM4), developing fan (FM5), power supply cooling fan (FM6) high-speed drive signal	FMDH	J103-B7 J103-B5 J114-A13	1: high speed
	4	main heater (H1) drive signal	$\overline{\text{MHRD}}$	J113-A2	1: ON
	5	sub heater (H2) drive signal	$\overline{\text{SHRD}}$	J113-A3	1: ON
	6	drum heater (H3) drive signal	$\overline{\text{DHRD}}$	J113-A5	0: off (half wave)

Address	bit	Description	Notation	Jack	Remarks
P009 (input)	7	reserved			
	8	jam location LED 7 ON signal	$\overline{\text{LED7}}$	J109-A9	1: ON
	9	jam location LED 6 ON signal	$\overline{\text{LED6}}$	J109-A8	1: ON
	10	jam location LED 5 ON signal	$\overline{\text{LED5}}$	J109-A7	1: ON
	11	jam location LED 4 ON signal	$\overline{\text{LED4}}$	J109-A6	1: ON
	12	jam location LED 3 ON signal	$\overline{\text{LED3}}$	J109-A5	1: ON
	13	jam location LED 2 ON signal	$\overline{\text{LED2}}$	J109-A4	1: ON
	14	jam location LED 1 ON signal	$\overline{\text{LED1}}$	J109-A3	1: ON
	15	jam location LED 0 ON signal	$\overline{\text{LED0}}$	J109-A2	1: ON
P010 (input)	0	side tray size 0 signal (SW501-1)	—	J109-B7	1: ON
	1	side tray size 1 signal (SW501-2)	—	J109-B6	1: ON
	2	side tray size 2 signal (SW501-3)	—	J109-B5	1: ON
	3	side tray size 3 signal (SW502)	—	J109-B4	0: metric 1: inch
	4	cleaning belt length warning sensor (Q8) signal	CBOUT	J103-A9	0: warning
	5	cleaning belt length sensor (Q9) signal	CBOP	J103-A10	0: no belt
	6	model 0 signal	—	JP104	
	7	model 1 signal	—	JP105	
P011 (input)	0	upper front tray size 0 signal (SW22)	PSZ0	J109-B7	1: ON
	1	upper front tray size 1 signal (SW23)	PSZ1	J109-B6	1: ON
	2	upper front tray size 2 signal (SW24)	PSZ2	J109-B5	1: ON
	3	upper front tray size 3 signal (SW25)	PSZ3	J109-B4	1: ON
	4	service switch signal	—	J109-B3	
	5	reserved			
	6	waste toner feedscrew lock switch (SW20) signal	WTFL	J118-A6 J118-A7	1: SW 20 ON
	7	front/delivery door open/closed switch (SW2/SW3) signal	$\overline{\text{DSOF}}$	J104-A5 J104-A6	0: open
P012 (input)	0	lower front tray size 0 signal (SW26)	PSZ0	J109-B7	1: ON
	1	lower front tray size 1 signal (SW27)	PSZ1	J109-B6	1: ON
	2	lower front tray size 2 signal (SW28)	PSZ2	J109-B5	1: ON
	3	lower front tray size 3 signal (SW29)	PSZ3	J109-B4	1: ON
	4	upper tray open switch signal	UTOP	J104-B3, 4	1: ON
	5	lower tray open switch signal	LTOP	J104-7, 8	1: ON

Address	bit	Description	Notation	Jack	Remarks
P012 (input)	6	upper tray open/closed switch (SW14) signal	$\overline{\text{UTRYO}}$	J114-A5, 6	0: open
	7	lower tray open/closed switch (SW15) signal	$\overline{\text{LTRYO}}$	J114-A3, 4	0: open
P013	0	reserved	—	—	
	1	reserved	—	—	
	2	reserved	—	—	
	3	reserved	—	—	
	4	reserved	—	—	
	5	reserved	—	—	
	6	reserved	—	—	
	7	reserved	—	—	
P014	0	—	—	—	
	1	—	—	—	
	2	—	—	—	
	3	—	—	—	
	4	—	—	—	
	5	—	—	—	
	6	—	—	—	
	7	reserved	—	—	
P015	0	—	—	—	
	1	—	—	—	
	2	—	—	—	
	3	—	—	—	
	4	—	—	—	
	5	—	—	—	
	6	—	—	—	
	7	—	—	—	
P016 (output)	0	upper tray pick-up roller release solenoid (SL11) drive signal	$\overline{\text{UPRSD}}$	J114-A11	1: SL 11 ON
	1	remote signal	REMOTE	J114-B1	1: remote signal ON
	2	protector drive signal	—	—	
	3	side tray motor ON signal	—	—	
	4	side tray feeder roller clutch (CL8) drive signal	$\overline{\text{4KFCD}}$	J113-B16	1: CL8 ON

Address	bit	Description	Notation	Jack	Remarks
P016 (output)	5	reserved			
	6	fixing drive stop solenoid (SL17) drive signal	$\overline{\text{FXDSD}}$	J101-B1	1: SL17 ON
	7	fixing assembly lock solenoid (SL16) drive signal	$\overline{\text{FIXLK}}$	J105-B4	1: SL16 ON
P017 (output)	0	primary corona wire cleaner HP switch (SW5) signal	$\overline{\text{PCHP}}$	J105-A5	0: SW5 ON
	1	primary corona wire cleaner HP switch (SW4) signal	$\overline{\text{PCR}}\overline{\text{P}}$	J105-A4	0: SW4 ON
	2	pre-transfer corona wire cleaner HP switch (SW7) signal	$\overline{\text{QCHP}}$	J105-A10	0: SW7 ON
	3	pre-transfer corona wire cleaner HP switch (SW6) signal	$\overline{\text{QCR}}\overline{\text{P}}$	J105-A9	0: SW6 ON
	4	transfer/separation corona wire cleaner HP switch (SW9) signal	$\overline{\text{SCHP}}$	J113-A12	0: SW9 ON
	5	transfer/separation corona wire cleaner HP switch (SW8) signal	$\overline{\text{SCR}}\overline{\text{P}}$	J113-A11	0: SW8 ON
	6	holding tray set	—	J116-A10	0: SET
	7	toner level sensor signal	TSP	J110-A8	1: toner present
P018 (output)	0	x lens motor drive signal	LX-A	J110-B5	alternates between '1' and '0' while motor is rotating.
	1	x lens motor drive signal	$\overline{\text{LX-A}}$	J110-B4	
	2	x lens motor drive signal	LX-B	J110-B3	
	3	x lens motor drive signal	$\overline{\text{LX-B}}$	J110-B1	
	4	y lens motor drive signal	LY-A	J110-B10	
	5	y lens motor drive signal	$\overline{\text{LY-A}}$	J110-B9	
	6	y lens motor drive signal	LY-B	J110-B8	
	7	y lens motor drive signal	$\overline{\text{LY-B}}$	J110-B6	
P019 (input)	0	reserved			
	1	scanner document leading edge sensor (Q4) signal	SCDP	J102-B8	1: scanner at Q4
	2	lens x home position sensor (Q2) signal	LXHP	J110-B14	1: HP
	3	lens y home position sensor (Q3) signal	LYHP	J110-B11	1: HP
	4	paper guide home position sensor (Q3) signal	THP	J116-A6	1: HP
	5	paper guide control signal	—	—	
	6	blank exposure 0 signal	—	—	
	7	blank exposure 1 signal	—	—	

Address	bit	Description	Notation	Jack	Remarks
P020 (output)	0	X lens motor hold signal	LX-COM	J110-B2	
	1	Y lens motor hold signal	LY-COM	J110-B7	
	2	paper jog drive motor hold signal	COM	J116-B2	
	3	signal for communication with microprocessor (Q101) master	—	—	
	4	signal for communication with microprocessor (Q101) master	—	—	
	5	signal for communication with control panel	—	—	
	6	main motor (M1) speed control signal	MMSC	J117-B15	
	7	signal for communication with control panel	—	—	

Address \ bit	7	6	5	3	3	1	·	0
P021	7	6	5	4	3	2	1	0
P022					*	OK	9	8
P023	RE- DUCE	EN- LARGE	DIRECT	TRAY SELECT	PRE- HEAT	COPY START	RESET	C/STOP
P024		RE- SERVE	RE- SERVE	INTER- RUPT	ID	LIGHTER	DARKER	AE
P025	GUIDE	AUTO REPRO	OVER- LAY	TWO- SIDED	PAGE SEPA- RATE		SORT	
P026					M4	M3	M2	M1
P027	ZOOM -	ZOOM +		COVER	PHOTO	SHEET FRAME ERASE	DOCU- MENT FRAME ERASE	BIND

- A press on the key will indicate '1'.
- A press on the COPY START key starts copying operation.
- A press on the  or  key changes the screen.
- A press on the RESET key ends the service mode.

Address	bit	Description	Notation	Jack	Remarks
P028		fixing thermistor signal	TH1	J103-A1	hexadecimal
P029		drum surface potential signal	POT	J110-A6	
P030		ambient sensor (TH501) signal	TH2	J109-B1	
P031		multifeeder paper width sensor signal	MPSZ	J118-B2	
P032		reserved			
P033 (output)	0	blank exposure LED ON control signal	SGM0	J108-A4	
	1	blank exposure LED ON control signal	SGM1	J108-B4	
	2	blank exposure LED ON control signal	SGM2	J108-A5	
	3	blank exposure LED ON control signal	SGM3	J108-B5	
	4	blank exposure LED ON control signal	SGM4	J108-A6	
	5	blank exposure LED ON control signal	SGM5	J108-B6	
	6	blank exposure LED ON control signal	SGM6	J108-A7	
	7	blank exposure LED ON control signal	SGM7	J108-B7	
P034 (output)	0	blank exposure LED ON control signal	SGM8	J108-A8	
	1	blank exposure LED ON control signal	SGM9	J108-B8	
	2	blank exposure LED ON control signal	SGM10	J108-A9	
	3	blank exposure LED ON control signal	SGM11	J108-B9	
	4	blank exposure LED ON control signal	SGM12	J108-A10	
	5	blank exposure LED ON control signal	SGM13	J108-B10	
	6	blank exposure LED ON control signal	SGM14	J108-A11	
	7	blank exposure LED ON control signal	SGM15	J108-B11	
P035 (input)	0	blank exposure LED ON control signal	SGM16	J108-A12	
	1	blank exposure LED ON control signal	SGM17	J108-B12	
	2	blank exposure LED ON control signal	SGM18	J108-A13	
	3	blank exposure LED ON control signal	SGM19	J108-B13	
	4	blank exposure LED ON control signal	SGM20	J108-A14	
	5	blank exposure LED ON control signal	SGM21	J108-B14	
	6	blank exposure LED ON control signal	SGM22	J108-A15	
	7	blank exposure LED ON control signal	SGM23	J108-B15	
P036 (input)	0	key return signal	KEY0	J107-A15	
	1	key return signal	KEY1	J107-A14	
	2	key return signal	KEY2	J107-A13	
	3	key return signal	KEY3	J107-A12	
	4	key return signal	KEY4	J107-A11	

Address	bit	Description	Notation	Jack	Remarks
P036 (input)	5	key return signal	KEY5	J107-A10	
	6	key return signal	KEY6	J107-A9	
	7	key return signal	KEY7	J107-A8	
P037 (output)	0	control panel LED ON signal	SEG0	J107-B15	
	1	control panel LED ON signal	SEG1	J107-B14	
	2	control panel LED ON signal	SEG2	J107-B13	
	3	control panel LED ON signal	SEG3	J107-B12	
	4	control panel LED ON signal	SEG4	J107-B11	
	5	control panel LED ON signal	SEG5	J107-B10	
	6	control panel LED ON signal	SEG6	J107-B9	
P039 (output)	7	control panel LED ON signal	SEG7	J107-B8	
	0	blank exposure oscillation signal		J108-A16	
	1	blank exposure oscillation signal		J108-B17	
	2	blank exposure oscillation signal		J108-A2	
	3	blank exposure oscillation signal		J108-A1	
	4	blank exposure oscillation signal			
	5	blank strong	—	—	
P040 (output)	6	reserved			
	7	reserved			
	0	control panel LED oscillation signal		J107-B7	
	1	control panel LED oscillation signal		J107-B6	
	2	control panel LED oscillation signal		J107-B5	
	3	control panel LED oscillation signal		J107-B4	
	4	control panel LED oscillation signal		J107-B3	
P041 (output)	5	control panel LED oscillation signal		J107-B2	
	6	control panel LED oscillation signal		J107-B1	
	7	cathode ray tube ON signal		J107-A7	
	0	paper guide motor drive pulse	A	J116-B5	
	1	paper guide motor drive pulse	$\overline{A}$	J116-B4	
	2	paper guide motor drive pulse	B	J116-B3	
	3	paper guide motor drive pulse	$\overline{B}$	J116-B1	
P041 (output)	4	reserved			
	5	reserved			
	6	reserved			
	7	reserved			

RDF

Address	bit	Description	Signal	Jack	Remarks
P042	0	side guide motor pulse signal	SGA	J14-5	
	1	side guide motor pulse signal	SGA	J14-4	
	2	side guide motor pulse signal	SGB	J14-3	
	3	side guide motor pulse signal	SGB	J14-2	
	4	side guide motor drive signal	—	J14-1	1: home position
	5	recycle motor drive signal	RMD	J12-3	1: motor ON
	6	pick-up motor drive signal	PUMD	J10-7	1: motor ON
	7	AE sensor lamp ON signal	—	J16-1	1: motor ON
P043	0	skew sensor signal	PDP4	J11-23	1: document present
	1	belt motor clock signal	BMCLK	J11-17	
	2	feeder motor clock signal	FMCLK	J11-15	
	3	belt motor double clock signal	—		
	4	delivery motor clock signal	DMCLK	J9-2	
	5	pick-up motor clock signal	PMCLK	J10-11	
	6				
	7	Q8 communication signal	—	—	
P044	0	communication with sub feeder controller PCB	—	J5-4	
	1	communication with sub feeder controller PCB	—	J5-3	
	2	Q8 communication signal	—	—	
	3	Q8 communication signal	—	—	
	4	belt motor drive signal	BMD	—	0: motor ON
	5	belt motor CW/CCW drive signal	BMS	—	0: RV
	6	feeder motor drive signal	FMS	J8-3	1: motor ON
	7	delivery motor drive signal	DMD	J4-1	1: motor ON
P045	0	watchdog signal	—		
	1	LED 10 ON signal	—	—	0: LED ON
	2	paper deflector solenoid drive signal	DFSLD	J8-6	1: solenoid ON
	3	ready signal	DRY	J1-6	0: ready
	4	Q4 communication signal	—	—	
	5	Q4 communication signal	—	—	
	6	Q18 communication signal	—	—	
	7	belt motor thermistor signal	TH	J11-19	

RDF

Address	bit	Description	Signal	Jack	Remarks
P046	0	reserved			
	1	pick-up roller sensor signal	PUSP	J1-7	0: roller HP
	2	pick-up sensor signal	PDP1	J1-1	1: document present
	3	delivery sensor signal	PDP2	J1-9	1: document present
	4	reversal sensor signal	PDP5	J1-1	1: document present
	5	delivery feeder sensor signal	PDP6	J9-7	1: document present
	6	delivery midway sensor signal	PDP7	J9-10	1: document present
	7	push switch (SW1) signal	—	—	1: SW1 ON
P047	0	DIP SW1 signal	—	—	0: SW ON
	1	DIP SW2 signal	—	—	0: SW ON
	2	DIP SW3 signal	—	—	0: SW ON
	3	DIP SW4 signal	—	—	0: SW ON
	4	DIP SW5 signal	—	—	0: SW ON
	5	DIP SW6 signal	—	—	0: SW ON
	6	RF switch signal	RFC	J2-1	0: RF open
	7	upper cover switch signal	UPCC	J3-1	0: upper cover open
P048	0	document tray motor overload signal	TMOL	—	0: overcurrent detected
	1	document tray position sensor signal	DTLP	J15-4	0: document tray lowering
	2	mixed document size mode switch signal	SMM	J12-14	0: switch ON
	3	thick paper mode switch signal	TDM	J12-15	0: switch ON
	4	reserved		J9-5	
	5	sub tray switch signal	STC	J12-11	1: sub tray open
	6	recycle sensor signal	LDD	J12-4	1: document set
	7	CCV connect signal	—	J5-6	0: CCV present
P049	0	mixed document size mode LED ON signal	SMLED	J12-16	1: LED ON
	1	thick mode LED ON signal	TDLED	J12-17	1: LED ON
	2	document set LED ON signal	DSD1	J12-1	1: LED ON
	3	for Q8 communication	—	—	
	4	paper retaining plate solenoid drive signal	WSLD	J10-4	1: solenoid ON

RDF

Address	bit	Description	Signal	Jack	Remarks
A049	5	belt motor brake signal	—	—	
	6	feeder motor brake signal	—	—	
	7	delivery motor brake signal	—	—	
P050	0	stopper plate solenoid drive signal	STPSLD	J10-2	1: solenoid ON
	1	registration solenoid drive signal	RGS LD	J8-2	1: solenoid ON
	2	brake solenoid drive signal	BKD	J13-2	1: solenoid ON
	3	document guide solenoid drive signal	DSSLD	J12-6	1: solenoid ON
	4	for Q18 communication	—	—	
	5	feeder sync clutch drive signal	CLD1	J10-6	1: clutch ON
	6	document tray motor drive signal	TMD	J15-2	1: motor ON
	7	delivery paper deflector plate solenoid drive signal	DDFSLD	J17-20	1: solenoid ON
P051		AE sensor output	AE	J6-6	hexadecimal
P052		document width sensor output	PSZ	J12-8	
P053		document sensor output	DEP1	J11-24	
P054		tray guide sensor output	DEP2	J12-10	
P055		skew sensor output	PDP4	J11-23	
P056		registration sensor output	PDP3	J11-21	
P057		reserved			
P058		reserved			

Sorter

Address	bit	Description	Signal	Jack	Remarks
P059	0	reserved			
	1	stapling home position sensor (PI12)	SPL-HP	J11-3	1: stapling home position
	2	stapler unit swing sensor (MS9) signal	SWG SET	J8-5	1: home position or stapling position
	3	stapler cover open/closed sensor (MS5) signal	SPLOPN	J10-3	1: stapler cover open
	4	guide bar home position sensor (PI7)	SGBHP	J12-6	1: home position
	5	lead cam home position sensor (PI5) signal	LCHP	J14-5	1: home position
	6	reserved			
	7	reserved			
P060	0	guide bar swing motor (M3) phase A excitation signal	$\overline{MA}$	J13-3, 5	alternates between '1' and '0' while the motor is rotating.
	1	guide bar swing motor (M3) phase B excitation signal	$\overline{MB}$	J13-4, 6	
	2	guide bar swing motor (M3) drive signal	MON	J13-2	1: motor ON
	3	staple motor (M4) FD rotation signal	$\overline{SPLMFW}$	—	0: FD rotation
	4	staple motor (M4) RV signal	$\overline{SPLMRV}$	—	0: RV rotation
	5	switch-back solenoid (SL1) drive signal	$\overline{PSLD}$	J7-8	0: SL2 ON
	6	paper path switch solenoid (SL2) drive signal	PSLD	J7-8	0: SL2 ON
	7	paper retaining solenoid (SL3) drive signal	PHSLD	J5-2	0: SL3 ON
P061	0	motor switch signal	—	—	
	1	staple ready indicator ON signal	SPLOK	J8-4	1: LED3 ON
	2	bin paper sensor LED ON signal	BPD	J12-2	
	3	motor clock signal	—	—	
	4	stapler unit swing motor (M5) drive signal	SWGMD	J9-1	1: M5 ON
	5	feeder motor clock sensor (PI6) signal	FMCLK	J5-4	
	6	reserved			
	7	feeder motor (M1) brake signal	—	—	1: M1 stop
P062	0	stapling position sensor signal	SPD	J8-8	1: paper present
	1	reserved	—	—	
	2	manual staple key signal	MNSPL	J8-1	0: switch ON
	3	non-sort paper sensor signal	NSPEXT	J7-5	0: paper present

Sorter

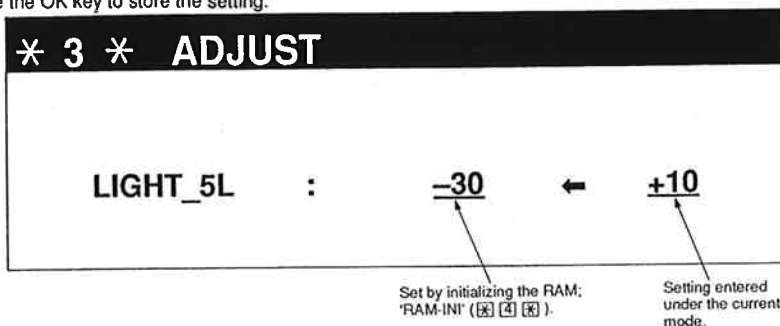
Address	bit	Description	Signal	Jack	Remarks
P062	4	sort paper sensor signal	$\overline{\text{SPEXT}}$	J7-2	0: paper present
	5	bin unit home position sensor signal	BHP	J14-2	1: bin unit at home position
	6	joint sensor signal	$\overline{\text{SOP}}$	J2-2	0: sorter detached
	7	reset signal	—	—	
P063	0	stapler position set sensor signal	SPL-SET	J10-6	0: stapler position
	1	reserved			
	2	reserved			
	3	reserved			
	4	reserved			
	5	reserved			
	6	reserved			
	7	reserved			

C.F.F.

Address	bit	Description	Signal	Jack	Remarks
P064 (output)	0	CFF motor (PM1) drive pulse	A	J2-3	
	1	CFF motor (PM1) drive pulse	$\bar{A}$	J2-4	
	2	CFF motor (PM1) drive pulse	B	J2-5	
	3	CFF motor (PM1) drive pulse	$\bar{B}$	J2-6	
	4	reserved			
	5	reserved			
	6	LED1 ON	—	—	
	7	document leading edge signal	CFRE	J1-2	
P065 (input)	0	—	—	—	
	1	document set switch (MS1) signal	DOSET	J6-1	
	2	CFF set switch (MS2) signal	CFFST	J6-3	
	3	cover open/closed switch (MS3) signal	COSET	J6-5	1: cover open
	4	document leading edge sensor (PI1) signal	DOTP	J5-2	1: document present
	5	document feed switch (SW2) signal	DFWD	J7-1	
	6	CFF motor clock sensor (PI2) signal	MCLK	J7-5	
	7	document feed switch (SW1)	DRVS	J7-2	
P066 (output)	0				
	1				
	2				
	3				
	4	heat exhaust fan (FM1, 2) drive signal	$\overline{\text{FMD}}$	J3-2	1: ON
	5				
	6				
	7				
P067 (input)	0	document width sensor (VR1) signal	DOWD	J4-2	
	1	reserved			
	2	reserved			
	3	reserved			
	4	heat exhaust fan rotation sensor signal	$\overline{\text{FM1A}}$, $\overline{\text{FM2A}}$	J3-5 J3-6	0: rotation detected
	5	CFF home position (MS4) signal	HPSET	J6-7	0: home position
	6				
	7		DOWD	J4-2	
P068		document width			

F. Adjustment Mode (✱ 3 ✱)

- Select the desired screen using the down and the up key.
- Enter the setting using the numeric keypad; use the ENLARGE/REDUCE key to increase/decrease the setting.
- Use the ID key to reverse + and -.
- Use the OK key to store the setting.



Screen 3-1

Item	Description	Settings	Remarks
DRUM_SEL	Use it to set the sensitivity most suited to the photo drum.	1 to 30	Enter the setting given in the sheet that comes with the photo drum when replacing the drum; press the OK key to execute potential control.
LIGHT_5H	Use it to adjust the scanning lamp reference ON voltage for 64% to 200% copying.	-128 to +127	A higher setting decreases the copy density.
LIGHT_5L	Use it to adjust the scanning lamp reference ON voltage for 50% to 63% copying.		
LIGHT5PH	Use it to adjust the scanning lamp reference ON voltage for 64% to 200% copying in the photo mode.	-128 to +127	A higher setting decreases the copy density in the photo mode.
LIGHT5PL	Use it to adjust the scanning lamp reference ON voltage for 50% to 63% copying in the photo mode.		
AE_SLOP	Use it to adjust the intensity for a newspaper document in the AE mode.	000 to 255	A higher setting increases the newspaper document density.

Item	Description	Settings	Remarks
REGIST_H	Use it to adjust the leading edge margin (registration) for 65% to 200% copying.	-128 to +127	A higher setting delays the registration roller ON timing, increasing the leading edge margin.
REGIST_L	Use it to adjust the leading edge margin (registration) for 50% to 63% copying and overlay copying.		
LE_BLANK	Use it to adjust the leading edge non-image width; blank exposure lamp ON time.	000 to 255	A higher setting increases the leading edge non-image width; unit, 0.2 mm.
BRAKE_SC	Use it to adjust the braking on the scanner moving in reverse.	2 to 60	A higher setting increases the braking on the scanner.
PRETRANS	Use it to adjust the current for the pre-transfer corona assembly.	000 to 255	A higher setting increases the current to the corona assembly.
TRN_1	Use it to adjust the current for the transfer corona assembly; 1st side.		
TRN_2	Use it to adjust the current for the transfer corona assembly; 2nd side.		
SEP_1	Use it to adjust the current for the separation corona assembly; 1st side.	000 to 255	A higher setting decreases the current to the corona assembly.
SEP_2	Use it to adjust the current for the separation corona assembly; 2nd side.		
MULT_SZ	Use it to correct the input data for the multifeeder paper width sensor VR.	-128 to +127	A higher setting increases the correction value, thereby increasing the detection width.
CFFLIGHT	Use it to adjust the CFF lamp reference ON voltage.	-128 to +127	A higher setting decreases the copy density with the CFF in use.
CFFAESLP	Use it to adjust the newspaper density in the AE mode with the CFF in use.	000 to 255	A higher setting increases the copy density of a document such as newspapers.
CFF_RGST	Use it to adjust the leading edge margin (registration) for coping with the CFF in use.	• 0 to 90 can be set when inputting using the numeric keypad. • 0 to 180 can be set when inputting using the ENLARGE/REDUCE key.	A higher setting delays the registration roller ON timing, thereby increasing the leading edge margin for copying with the CFF in use; unit, 0.2 mm.

Item	Description	Settings	Remarks
GLEAM_5H	Use it to adjust the optimum exposure (during non-potential control) for 64% to 200% copying.	000 to 255	A higher setting decreases the copy density.
GLEAM_5L	Use it to adjust the optimum exposure (during non-potential control) for 50% to 63% copying and overlay copying.		
CFFGLEAM	Use it to adjust the optimum exposure ON voltage for the CFF lamp (during non-potential control).	000 to 255	A higher setting reduces the copy density for copying with the CFF in use.
ATM	Use it to set the operating conditions to suit the atmospheric pressure.	0 to 3	0: 1 to 0.75 atm (altitude up to about 2,500 m) 1: 0.75 to 0.70 atm (altitude from about 2,500 m to 3,000 m) 2: 0.70 to 0.65 atm (altitude from about 3,000 m to 3,500 m) 3: 0.65 to 0.60 atm (altitude from about 3,500 m to 4,500 m)
RFAE_F5	Use it to adjust the scanning lamp reference ON voltage for the RDF AE mode.	000 to 255	A higher setting reduces the copy density for copying in the RDF AE mode.
RFAE_F9	Use it to adjust the newspaper document intensity for the RDF AE mode.	000 to 255	A higher setting increases the newspaper document density.
BIAS_N	For factory.		
DOC_STOP	Use it to adjust the document stop position (for RDF).	-7 to +7	A higher setting shifts the stop position to the right in units of 0.5 mm; for details, see service handbook.
11 × 17_PSZ	Use it to fine-tune the distance over which the guide in the duplexing unit moves for each paper size. Make adjustments in the modes if pick-up fails when paper is picked up from the duplexing unit in two-side/overlay copying.	-9 to +9 (mm)	- When set to +9, the distance increases +9 mm in relation to the paper size. - When set to -9, the distance decreases -9 mm in relation to the paper size. - Note, however, the setting must be between 180 mm and 299 mm for mechanical reasons.
LGL_PSZ			
LTR_PSZ			
LTRR_PSZ			
A3_PSZ			
B4_PSZ			
A5_PSZ			
B5_PSZ			
A4R_PSZ			
B5R_PSZ			

G. Making Adjustments Using ADJUST ($\times$ 3 $\times$)

1. Setting the Drum Sensitivity

Set the item when replacing the photosensitive drum.

- 1) Enter the service mode ($\times$ 3 $\times$), and select the 'DRUM_SEL' screen using the up and down keys.

DRUM_SEL: 1 ← 3

- 2) Enter the setting shown on the sheet that comes with the photosensitive drum (between 1 and 30).
- 3) Press the OK key.
 - The setting is entered.
 - Potential control is executed.
- 4) Press the RESET key to leave the service mode.

2. Adjusting the Reference ON Voltage for the Scanning Lamp

If the density is too high or too low, select and adjust the following items according to the Image Adjustment Basic Procedure in the SERVICE HANDBOOK.

- 1) Make adjustments according to the Image Adjustment Basic Procedure.
- 2) Enter the setting shown on the sheet that comes with the photosensitive drum (between 1 and 30).

LIGHT_5L: +0 ← +10

- reproduction at 50% to 63%

LIGHT_5H: +0 ← -30

- reproduction at 64% to 200%

LIGHT5PL: +0 ← -30

- reproduction at 50% to 63% and in photo mode

LIGHT5PH: +0 ← -30

- reproduction at 64% to 200% and in photo mode

CFFLIGHT: +0 ← +10

- C.F.F. lamp reference ON voltage adjustment
- 3) Change the setting using the ENLARGE or REDUCE key.
 - For +/-, press the ID key
 - A higher setting lowers the density; and a lower setting raises the density.
 - 4) Press the OK key to store the setting.
 - 5) Press the COPY START key, and check the image output; if the result is good, press the RESET key twice to leave the service mode.

3. Adjusting the AE (CMAE) Slope

After executing 'AE_ADJ' in the service mode ($\times$ 4 $\times$), adjust 'AE_SLOP' ($\times$ 3 $\times$). Further, after executing 'CFFAEADJ' ($\times$ 4 $\times$), execute 'CFFAESLP' ($\times$ 3 $\times$).

AE_SLOP: 93 ← 100

- adjusting the intensity for dark document in AE mode

CFFAESLP: 64 ← 100

- adjusting the intensity for dark document in C.F.F. AE mode

■ For adjustment of 'AE_SLOP', see p. 3-182.

■ For adjustment of 'CFFAESLP', see p. 3-184.

4. Adjusting the Leading Edge Margin (registration)

Use the item to adjust the leading edge margin (registration clutch ON timing).

REGIST_L: -10 ← +20

- reproduction at 50% to 63% (in increments of 0.308 mm)

REGIST_T: -15 ← -21

- reproduction at 64% to 200% (in increments of 0.379 mm)

CFRGST: 37 ← 100

- C.F.F. in use (in increments of 0.2 mm)
- For adjustment, see the SERVICE HANDBOOK.
- For adjustment of 'CFRGST', of the SERVICE HANDBOOK.

5. Adjusting the Leading Edge Non-Image Width (blank exposure lamp ON timing)

Use the item to adjust the leading edge non-image width (blank exposure ON timing).

LE_BLANK: 88 ← 74

- in increments of 0.2 mm
- For adjustment, see the SERVICE HANDBOOK.

6. Adjusting the Braking of the Scanner (moving in reverse)

Use the item to adjust the braking on the scanner moving in reverse, thereby adjusting the scanner stop position.

BRAKE_SC: 22 ← 8

- settings between 2 to 60
- For adjustment, see the SERVICE HANDBOOK.

7. Adjusting the Current for the Pre-Transfer Corona Assembly

Enter the setting shown on the Service Label attached behind the left front door when replacing the DC controller PCB.

Work referring to "Replacing the DC Controller PCB" on p. 3-185.

- 1) Enter the service mode (3), and select the screen using the up and down keys.

PRETRANS: 225 ← 200

- setting between 0 and 255

- 2) Enter the setting shown on the Service Label using the numeric keypad or the ENLARGE/REDUCE key.
- 3) Press the OK key.
 - The setting is stored.
- 4) Press the RESET key twice to leave the service mode.

8. Adjusting the Current for the Transfer Corona Assembly

Enter the setting shown on the Service Label attached behind the left front door when replacing the DC controller PCB.

Work referring to "Replacing the DC Controller PCB" on p. 3-185.

- 1) Enter the service mode (3), and select the screen using the up and down keys.

TRN_1: 68 ← 100

- adjusting the current for the 1st side of the copy
- setting between 0 and 255

TRN_2: 64 ← 100

- adjusting the current for the 2nd side of the copy
 - setting between 0 and 255
- 2) Enter the setting shown on the Service Label using the numeric keypad or the ENLARGE/REDUCE key.
 - 3) Press the OK key.
 - The setting is stored.
 - 4) Press the RESET key twice to leave the service mode.

9. Adjusting the Current for the Separation Corona Assembly

Enter the setting shown on the Service Label attached behind the left front door after replacing the DC controller PCB.

Work referring to "Replacing the DC Controller PCB" on p. 3-185.

- 1) Enter the service mode ($\boxed{\times}\boxed{3}\boxed{\times}$), and select the screen using the up and down keys.

SEP_1: 117 ← 120

- adjusting the current for the 1st side of the copy

SEP_2: 142 ← 160

- adjusting the current for the 2nd side of the copy
- 2) Enter the setting shown on the Service Label using the numeric keypad or the ENLARGE/REDUCE key.
 - 3) Press the OK key.
 - The setting is stored.
 - 4) Press the RESET key twice to leave the service mode.

Note:

If separation fails because of the environment, change the setting under 'FUZZY' in the service mode (*5*).

If this does not correct the problem, use 'SEP' (*3*) to fine tune the mechanism; be sure to record the new setting on the service label after adjustment.

- Before adjusting the current, make sure that leakage is not noted.

10. Correcting the Multifeder Paper Width Identification Data

Enter the setting shown on the Service Label attached behind the left front door after replacing the DC controller PCB.

Work referring to "Replacing the DC Controller PCB" on p. 3-185.

- 1) Enter the service mode ($\boxed{\times}\boxed{3}\boxed{\times}$), and select the screen using the up and down keys.

MULT_SZ: +0 ← -10

- 2) Enter the setting shown on the Service Label using the numeric keypad or the ENLARGE/REDUCE key.
- 3) Press the OK key.
 - The setting is stored.
- 4) Press the RESET key twice to leave the service mode.

11. Adjusting the Scanning Lamp Reference ON Voltage (non-potential control)

Use the item to make adjustments if the density is too low or too high in the non-potential control mode.

- 1) Enter the service mode ($\boxed{\times}\boxed{4}\boxed{\times}$), and select the 'PO.CONT' screen using the up and down keys.
- 2) Press the OK key.
- 3) Press the RESET key to cancel AE and set the copy density to '5'.
- 4) Make sample copies using the Test Sheet.
- 5) Enter the service mode ($\boxed{\times}\boxed{3}\boxed{\times}$), and select the items below using the up and down keys.

GLEAM_5L: 95 ← 100

- reproduction at 50% to 63% in non-potential mode

GLEAM_5H: 92 ← 100

- reproduction at 64% to 200% in non-potential mode

CFFGLEAM: 95 ← 100

- reproduction in C.F.F. non-potential mode
- 6) Increase or decrease the setting using the ENLARGE/REDUCE key.
 - 7) Press the OK key.
 - 8) Make sample copies, and check the image output.
 - 9) Record the new setting on the Service Label if the image output is good.
 - 10) Press the RESET key twice to leave the service mode.

12. Environment Settings (atmospheric pressure)

Enter the setting shown on the Service Label.

- 1) Enter the service mode ($\boxed{\times}\boxed{3}\boxed{\times}$), and select the following:

ATM: 0 ← 2

- 2) Enter the setting shown on the Service Label using the numeric keypad.
- 3) Press the OK key.
- 4) Press the RESET key to leave the service mode.

13. Adjusting RFAE

Enter the setting shown on the Service Label attached behind the left front door after replacing the DC controller PCB.

Work referring to "Replacing the DC Controller PCB" on p. 3-185.

- 1) Enter the service mode ($\boxed{\times}\boxed{3}\boxed{\times}$), and select the screen using the up and down keys.

RFAE-F5: 51 ← 60

- adjusting the scanning lamp reference ON voltage (copy density 5) in RFAE

RFAE-F9: 143 ← 150

- adjusting the scanning lamp reference ON voltage (copy density 9) in RFAE
- 2) Enter the setting shown on the Service Label using the numeric keypad or the ENLARGE/REDUCE key.
 - 3) Press the OK key.
 - The setting is stored.
 - 4) Press the RESET key twice to leave the service mode.

14. Adjusting the RDF Document Stop Position

Use the item to adjust the stop position (feeding direction) for documents fed by the RF to the copyboard glass.

DOC_STOP: 0 ← +7

- For adjustment, see the SERVICE HANDBOOK.

H. Operation/Inspection Mode (4)

- Select the desired screen using the down and the up key.
- Press the OK key to start the selected operation.
- Execute each operation in the standby mode ONLY.

* 4 * FUNCTION

TONER_S : 0 (1 : START)

*1' during operation.

Item	Description	Remarks
TONER_S	Use it to supply toner at time of installation.	A press on the OK key supplies the developing assembly with toner from the hopper; up to 10 min; stops automatically.
AE_ADJ	Use it to execute density measurement level automatic adjustment for the AE mode.	See p. 3-182.
PO. CONT	Use it to enable or disable potential control. 0: potential control ON 1: potential control OFF	To disable potential control, press the OK key; '1' will be indicated.
ERROR	Use it to clear 'E000', 'E001', 'E002', 'E003', or 'E020'.	To clear an E indication, press the OK key; '1' will be indicated.
DISPLAY	Use it to check the indications on the control panel.	A press on the OK key causes the LEDs on the control panel to go ON for 3 sec; all LEDs.
LCD_CHK	Use it to cause all indicators on the LCD to go ON.	A press on the OK key causes all indicators on the LCD to go ON; they will go OFF automatically after 3 sec.
BLANK	Use it to check the blank exposure LEDs.	A press on the OK key causes the blank exposure LEDs to go ON for 3 sec; all LEDs.
PRE_EXP	Use it to check the pre-exposure LEDs.	A press on the OK key causes the pre-exposure LEDs to go ON for 3 sec; all LEDs.

Item	Description	Remarks
SCANLAMP	Use it to check the scanning lamp.	A press on the OK key causes the scanning lamp to go ON for 3 sec.
CFF_LAMP	Use it to check the CFF lamp.	A press on the OK key to cause the CFF lamp to go ON for 3 sec.
HPPR_MTR	Use it to check the operation of the hopper motor.	A press on the OK key causes the hopper motor rotate for 3 sec.
GRID_ADJ	Use it to adjust the primary corona assembly grid voltage.	See p. 3-185.
BINS_UP	Use it to raise the sorter bins (1st sorter).	Press the OK key to move the sorter bins in the 1st sorter over a length equivalent to 20 bins.
CFF_MRR	Use it to check the CFF mirror.	Press the OK key to raise the CFF mirror attached to the lens mount.
CFFAEADJ	Use it to execute density measurement level automatic adjustment for the AE mode in the CFF.	See p. 3-182.
RAM_INIT	Use it to initialize the data in the RAM (Q114, Q115, Q281) on the DC controller PCB.	A press on the OK key initializes the RAM.

I. Settings Mode (5)

- Select the desired screen using the down key and the up key.
- Press the OK key to enter the settings for each mode.
- Use the numeric keypad to enter the settings.

* 5 * OPTION

STD_MODE : 0 (1 : SET)

Item	Function	Description	Remarks
STD_MODE	sets the standard mode	The mode brought up in response to a press on the RESET key may be stored.	Enter the desired standard mode; check the settings indicated on the control panel; then, select this item, and press the OK key.
BEEP	Use it to enable or disable the buzzer.	1: disables the buzzer 0: enables the buzzer	
ERASE	enables or disables the standard sheet frame erasing	Use it to enable or disable the 2-mm frame erasing width from the left/right of the copy. 0: leading 4, trailing 2, left/right 2. 1: leading 4, trailing 2, left/right 0. 2: leading 3, trailing 1, left/right 0. [unit: mm]	
BIND_1ND	enables or disables the binding mode	Use it to enable or disable the binding margin for the 'one-sided documents to two-sided copy' or 'two-sided document to two-sided copy' mode.	0: disable binding 1: enable binding
1_SORT	enables or disables single document sorting	Use it to enable or disable sorting of a single document when using the RDF-A1. 0: enables sorting 1: disables sorting	
MODE_INI	initializes settings mode	Use it to initialize each item used in the standard mode.	1: initialize

Item	Function	Description	Remarks
DATETIME	enables or disables date/time display	0: indicates date/time on control panel 1: does not indicate date/time on control panel	
DATESEL	selects mode of date indication	If February 25, 0: 2/25 1: 25/2 2: FEB/25	Machines are set to '0' (2/25) at time of shipment; enter '0', '1', or '2', then press the OK key.
SHUT_OFF	sets auto shut-off time	Use it to set the auto shut-off time between 10 min and 300 min in 10-min increments. The mechanism may be disabled by entering '0'.	Enter the setting using the numeric keypad, and press the OK key.
SKIP	enables or disables skipping	0: enables skipping 1: disables skipping	When set to '1', the mode is fixed to 'OFF'.
AUTO_STR	enables or disables auto-matic start in consecutive mode	Use it to enable or disable starting copying operation automatically in the consecutive mode. 0: enables auto copy start 1: disables auto copy start	
DENS_IND	switches mode of copy density indication	Use it to switch modes of copy density indication; normally, 9 steps. 0: 9 steps 1: 17 steps	
FUZZY	executes fuzzy control and sets environment	Use it to control the current (fuzzy control) applied to the pre-transfer, transfer, and separation corona assembly to suit the ambient temperature; also, this control mechanism may be disabled and select 3-step settings.	0: fuzzy control ON 1: when image is too light because of low humidity 2: when ambient temperature is normal 3: when copy paper comes into contact with cleaner separation claw because of high humidity Enter '0', '1', '2', or '3'; then press the OK key.
CPM		For factory.	

Item	Function	Description	Remarks
DEV_ROT	enables or disables developing sleeve 1/2 rotation sequence	The developing sleeve may be automatically rotated a half turn when copying operation does not take place for a certain period of time. 0: disables the rotation 1: copying starts 2 sec after 1/2 rotation 2: copying starts 5 sec after 1/2 rotation	Set it to '1' if images have problems caused by uneven coatings of toner on the developing sleeve.
DF_SIZE	enables or disables auto paper selection when AB and INCH documents are mixed	The auto paper select mechanism may still be used when documents of AB and INCH types are mixed. 0: disables the mechanism 1: enables the mechanism	If set to '1' and A4 and LTR documents are mixed in the RDF-A1, A4 and LTR sheets will be selected.
CFF_JAM	Narrows jam detection timing	C.F.F.-A1 jam sensor observes every other hole on the computer forms to check paper feeding status. This method can be switched to observe every hole to restrict jam detection. 0: Checks every hole. 1: Checks every other hole.	0: Checks each hole. 1: Checks every other hole.
WEB	Used to change the number of times the cleaning belt solenoid goes ON.	The cleaning solenoid goes ON twice when 1st side of the copy is made in two-sided copy mode. This can be changed to once.	1: ON; twice 0: ON; once
MRR_CONE	causes the copier to recognize that the C.F.F. mirror is attached.	The copier cannot recognize the presence of the C.F.F. mirror, and the mode forces the copier to recognize it. 0: not attached. 1: attached.	Make sure that the setting is '1' after attaching the mirror.
DF_SORT	disables automatic activation of sort mode when the RDF-A1 is used.	0: automatically activates sort mode when the RDF-A1 is used. 1: disables automatic activation of sort mode when the RDF-A1 is used.	
DF_APS	disables auto paper selection (APS) when the RDF-A1 is used.	0: automatically activates APS when the RDF-A1 is used. 1: disables automatic activation of APS when the RDF-A1 is used.	

J. Counter Mode (6)

- Select the desired screen using the down and the up key.
- With the screen on the display, press the C/S key on the control panel while holding down the service switch (SW503) on the jam location indicator PCB to return the counter reading to '00000000'.

* 6 * COUNTER

L_TOTAL : 0 0 0 0 0 0 0 1

L_TOTAL	total L copy counter		
L_MULTI	L copy multifeeder copy counter	Large size (300 mm or more and irregular)	returns to '00000000' after '99999999'
L_TRAY_1	L copy upper front tray copy counter		
L_TRAY_2	L copy lower front tray copy counter		
L_DECK	L copy side tray copy counter		
L_OVERLAY	L copy overlay 2nd face copy counter		
L_2_SIDE	L copy tow-sided 2nd face copy counter		
L_DF	L document feeder counter		
S_TOTAL	total S copy counter	Small size (less than 300 mm)	
S_MULTI	S copy multifeeder copy counter		
S_TRAY_1	S copy upper front tray copy counter		
S_TRAY_2	S copy lower front tray copy counter		
S_DECK	S copy side tray copy counter		
S_OVERLAY	S copy overlay 2nd face copy counter		
S_2_SIDE	S copy tow-sided 2nd face copy counter		
S_DF	S document feeder counter		
CFF	CFF copy counter		

■ Counts

1. TOTAL

- if 1st side of overlay/two-sided copy, when paper reaches holding tray.
- if 2nd side of one-sided copy or overlay/two-sided copy, when paper is delivered outside copier; or to bin if sorter is used (tandem or otherwise).

2. OVERLAY, 2_SIDE

- if 2nd side of overlay/two-sided copy, when paper is delivered outside copier.

3. MULTI, TRAY_1, TRAY_2, DECK

- when paper picked up from each is delivered outside copier.

4. DF

- when document size is identified after it is pulled into DF.

5. C.F.F.

- when form is picked up.

II. Adjustment

1 AE (auto exposure)

- 1) Open the front door, and insert the door switch actuator into the door switch assembly.
- 2) Press the service mode switch using a hex key.
- 3) Select 'AE_ADJ' in the service mode (*4*).
- 4) Set the Test Sheet on the copyboard, and close the copyboard cover.

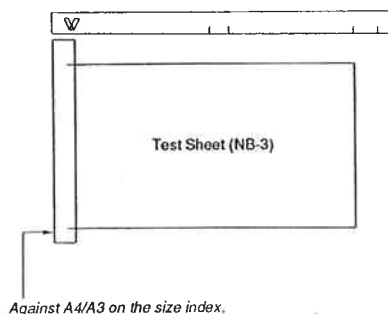


Figure 2-31

Butt against the edge.

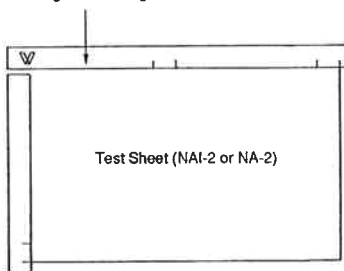


Figure 2-32

- 5) Press the OK key, and select '1'; 'AE_ADJ (1: START)'.
- 6) Press the COPY START key; then, wait until the COPY DENSITY indicator changes from '5' to '9'.
- 7) Set a newspaper on the copyboard, and close the copyboard cover.
- 8) Press the COPY START key.
End the adjustment if the COPY DENSITY indicator changes from '5' to '9'; if '5' and '9' alternate at intervals of 5 seconds, go over the steps once again.
- 9) Press the RESET key twice to leave the service mode.

2 Adjusting the AE Slope

After adjusting the AE mechanism, make a copy of a newspaper or a document with dark images. If the image is foggy or too light, go through the following:

- 1) Open the front door, and insert the door switch actuator in the door switch assembly.
- 2) Press the service mode switch using a hex key.
- 3) Select 'AE-SLOP' (*3*) in the service mode.
- 4) Place a newspaper on the copyboard.
- 5) Adjust 'AE-SLOP' with the following in mind:
 - If the setting in the adjustment mode is decreased, copies of a newspaper will be lighter.
 - If the setting in the adjustment mode is increased, copies of a newspaper will be darker.

Note:

Copies may be made by the COPY START .

- 6) Press the RESET key twice to leave the service mode.

3 Adjusting AE for C.F.F.

- 1) Open the front door, and insert the door switch actuator in the door switch assembly.
- 2) Press the service mode switch using a hex key.
- 3) Select 'CFFAEADJ' in the service mode ($\boxed{\times}$ $\boxed{4}$ $\boxed{\times}$).
- 4) Press the OK key, and select '1'.
- 5) Close the CFF cover without placing a document on the platen glass of the C.F.F.
- 6) Press the COPY START key; then, wait until the COPY DENSITY indicator changes from '1' to '5'.
- 7) Place the Test Sheet (FY9-9202-000) on the platen glass of the C.F.F., and set it on the tractor; then, move the leading edge of the Test Sheet as far as the delivery outlet of the C.F.F.
- 8) Press the COPY START key; then, wait until the COPY DENSITY key changes from '5' to '9'.
- 9) Remove the Test Sheet, place a news paper, and close the CFF cover; the newspaper need not be set to the tractor.
- 10) Press the COPY START key.
The copy density indicator changes from '9' to '5'. If it alternates between '5' and '9', repeat the procedure.
If '5' and '9' (copy density reading) alternate, make the adjustment once again; the condition indicates an adjustment error.
- 11) Press the RESET key twice to leave the service mode.

Note:

A press on the COPY START key while adjusting the CFF AE mechanism will not start copying operation or feeding operation in the C.F.F.

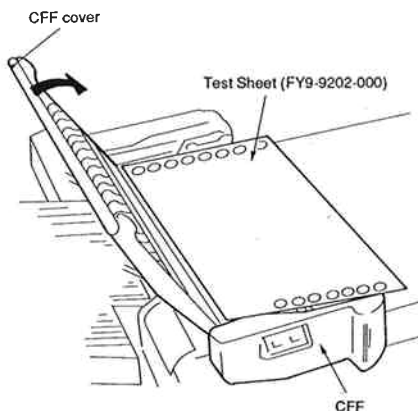


Figure 3-804

4 Adjusting AE Slope for CFF

After adjusting the CFF AE mechanism, make a copy of a document* used by the user. If the copy is foggy or too light, go over the following:

* Colored document; or document with light images or recycled paper.

- 1) Open the front door, and insert the door switch actuator in the door switch assembly.
- 2) Press the service mode switch using a hex key.
- 3) Select 'CFFAESLP' in the service mode (✱) [3] (✱).
- 4) Set the document in the C.F.F.
- 5) Adjust 'CFFAESLP'.
 - If the setting in the adjustment mode is decreased, copies of the document will be lighter in AE mode.
 - If the setting in the adjustment mode is increased, copies of the document will be darker in AE mode.

Note:

Set a document used by the user in the C. F. F. Copies may be made by a press on the COPY START key .

- 6) Press the RESET key twice to leave the service

5 Adjusting the Volume (primary corona assembly)

Adjust the value of the primary corona assembly when

- replacing the drum.
- replacing the primary corona assembly
- 'VDM' in the service mode (✳ 1 ✳) is not VDT ± 30 V.

Adjusting the Volume

- 1) Connect the power plug, thereby turning the drum heater ON; wait more than 10 minutes.
- 2) Turn the volume of the corona assembly fully to the left to prevent excess potential.
- 3) Select 'GRID-ADJ' in the service mode (✳ 4 ✳).
- 4) Press the OK key.
- 5) Enter the service mode (✳ 1 ✳) press the down key while the photo sensitive drum rotates for 30 seconds.

Turn the volume of the primary corona assembly VR gradually so that the value of 'DPOT' is VDT ± 60 V; try the setting closest to VDT.

- 6) Press the RESET key.
- 7) Switch the machine OFF and then ON.
- 8) Check that the VDM in the service mode (✳ 1 ✳) is VDT ± 30 V; otherwise, go back to step 3).

6 After Replacing the DC controller PCB

- 1) Attach the new DC controller PCB.
- 2) Press SW503 on the jam location indicator PCB.
- 3) Select 'RAM-INIT' in the service mode (✳ 4 ✳).
- 4) Press the OK key; the RAM will be initialized.
- 5) Adjust AE.
- 6) Enter the settings shown on the label behind the front door.
- 7) Enter the settings for the user in the service mode (✳ 5 ✳).
- 8) Press the RESET key twice to leave the service mode.

7 Checking the Surface Potential System

a. Outline

When an image problem occurs, it is important to determine whether the problem is caused in the electrostatic latent image block (photosensitive drum, potential control system, etc.) or the development/transfer system; to do so, the surface potential must be checked in the service mode.

b. Disabling the Automatic Control Mechanism

The automatic control mechanism may be disabled to check the corona current control, lamp intensity control, or developing bias control mechanism; this way of checking the mechanisms is called *non-auto control mode*.

The non-auto control mode may be made use of as a tentative measure to override a problem in the auto control mechanism. All outputs under the non-auto control mode will be fixed to the standard values.

① Disabling the Mechanism

- 1) Select 'PO.CONT' in the service mode ($\boxed{\times}\boxed{4}$).
- 2) Check that the message display shows the following.

PO. CONT : 0 (1 :NOP)

- 3) Press the ON key on the control panel to enter the non-auto control mode.

PO. CONT : 1 (1 :NOP)

- 4) Press the RESET key on the control panel twice.

Note:

In the non-auto mode, the corona current control, intensity control, and developing bias control mechanisms will all be fixed to the standard values.

② Making Use of the Non-Control Mode

Use the mode to determine whether the image problem, if any, is caused by input or output side of the microprocessor on the DC controller.

If the image is corrected somewhat in the non-auto control mode, the problem is on the input side, i.e., potential measuring unit, DC controller PCB, or the like.

C. Zero-Level Check

A *zero-level check* may be made use of to determine the condition of the surface potential control PCB.

Note:

In a *zero-level check*, a check is made to determine whether the microprocessor correctly identifies the voltage of the drum surface potential, i.e., 0 V, thereby checking the condition of the microprocessor on the DC controller and the measuring unit.

In the following, *Method 1* checks the level shift circuit on the DC controller PCB and *Method 2*, the potential measuring circuit.

① Method 1

- 1) Switch the machine OFF.
- 2) Detach the right cover and the upper front cover.
- 3) Disconnect connector J4 on the potential measuring PCB.
- 4) Short J121-1 and J121-2 on the DC controller PCB using a jumper wire.
- 5) Insert the door switch actuator, and switch the machine ON.
- 6) Select the screen that shows 'DPOT' (drum surface potential) in the service mode ($\boxed{\times}\boxed{1}$).
- 7) Check that 'DPOT' on the message display is 0 $\pm$ 30 V.

Note:

If not 0 $\pm$ 30 V, the DC controller PCB may be faulty.

- 8) Switch the machine OFF, and detach the door switch actuator.
- 9) Remove the jumper wire from the DC controller PCB.
- 10) Connect the connector to J4 on the potential measuring PCB.

- 11) Attach the upper front cover, and the right cover.
- 12) Switch the machine ON.

② Method 2

- 1) Switch the machine OFF.
- 2) Detach the blank exposure lamp assembly.
- 3) Connect the connector of the potential sensor.
- 4) Attach the potential sensor tester electrode (TKN-0197) to the potential sensor.

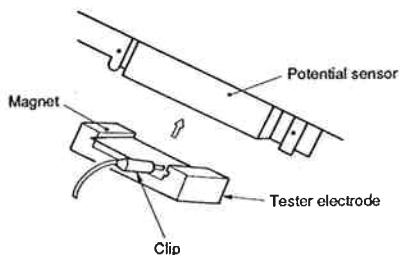


Figure 3-805

Note:

Attach the tester electrode to the potential sensor while taking care not to bring the magnet of the tester electrode into contact with the potential sensor cover.

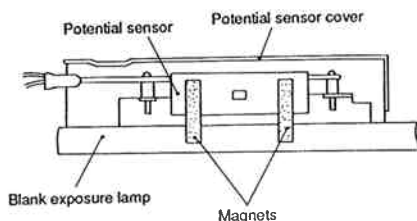


Figure 3-806

- 5) Attach the clip of the jumper wire to the potential sensor tester electrode.

Note:

Do NOT bring the clip into contact with the sensor cover; keep it sufficiently away from the sensor window.

- 6) Connect one end of the jumper wire to J4-1 on the potential measuring PCB.
- 7) Insert the door switch actuator into the door switch assembly.
- 8) Switch the machine ON.

Note:

Do not touch the potential sensor after switching the machine ON.

- 9) Select the screen that shows 'DPOT' (drum surface potential) in the service mode (X 1 X).
- 10) Check that 'DPOT' on the message display is 0 ± 30 V.

Note:

- i. If the value is within the standards under Method 1 and outside them under Method 2, suspect dirt on the sensor or a fault in the potential measuring unit.
- ii. If the value is within the standards under both Methods 1 and 2, the signal path and operation between the potential sensor unit and the microprocessor on the DC controller PCB are normal.

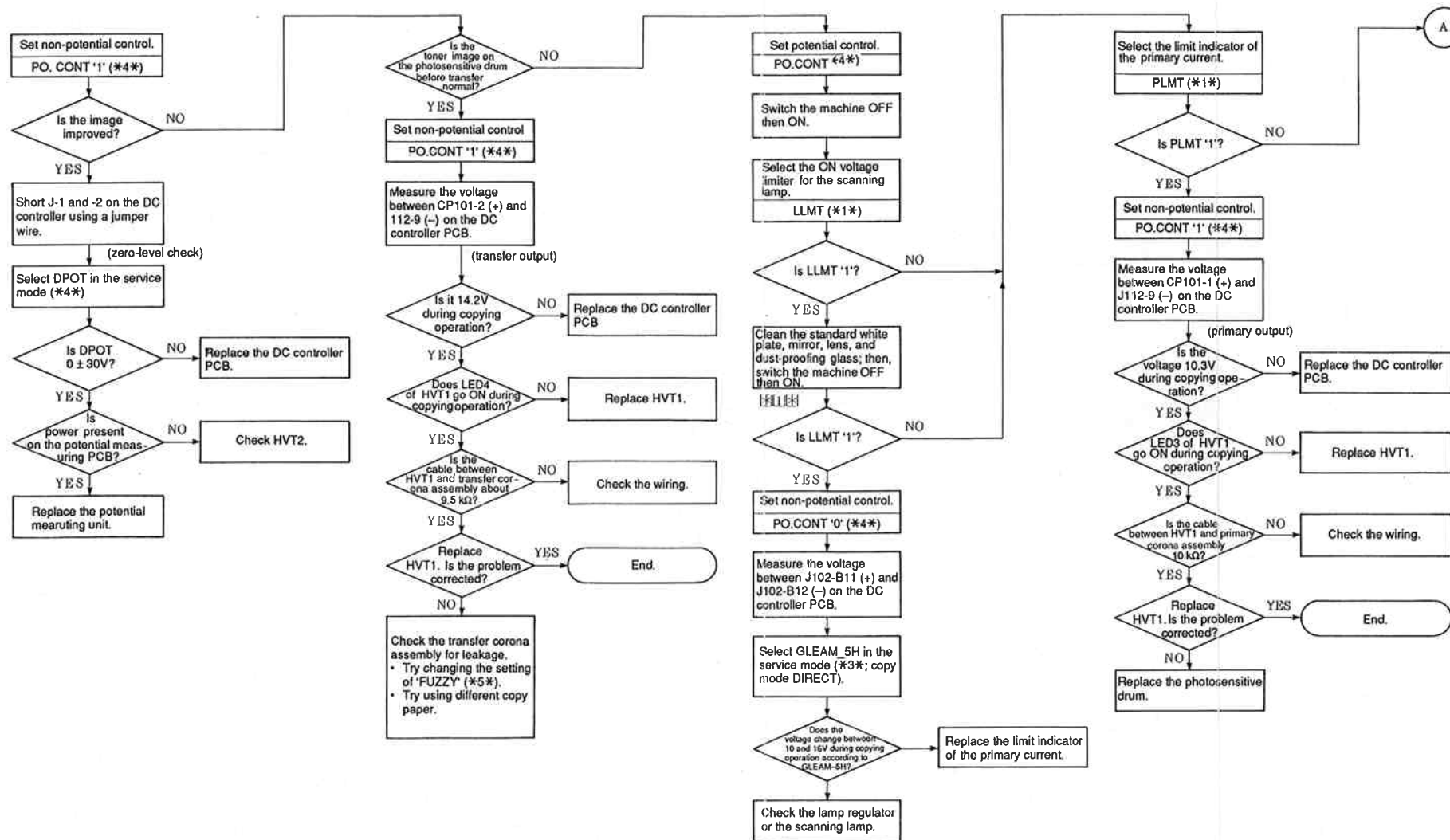
- 11) Switch the machine OFF.
- 12) Detach the potential sensor tester electrode.
- 13) Attach the blank exposure lamp assembly.
- 14) Switch the machine ON.

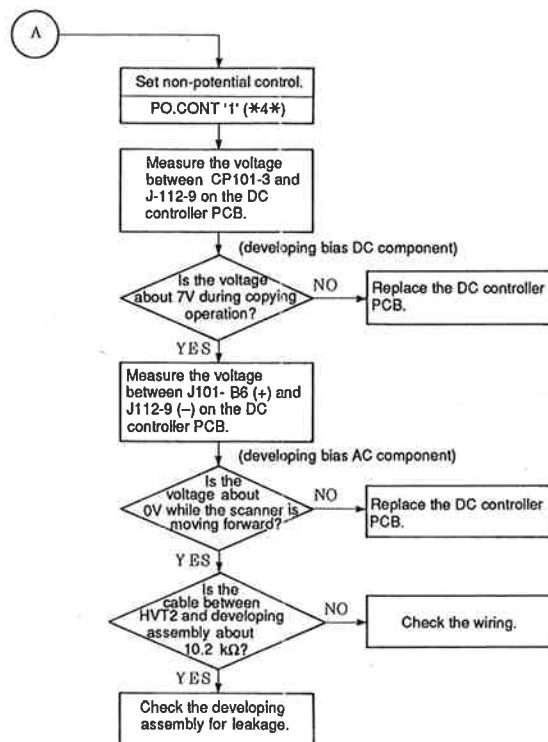
8 Troubleshooting by Block

Block	Checks	Normal	Cause of fault
Potential measuring unit	LED1 (potential measuring unit)	The LED is ON while the main motor is rotating.	Potential measuring unit, High-voltage transformer 2 (F30V power supply)
	Fluctuation in voltage between J121-1 and J121-2 (GND)	The tester index swings between 0 and 5 V four times during control rotation 1; tester range at 12 VDC.	Primary corona assembly, High-voltage transformer 1, DC controller PCB, Potential measuring unit, High-voltage transformer 2
Potential detection circuit	Zero-level check	'DPOT' on the display under both Methods 1 and 2 (p. 3-185) is 0 ± 30 V.	DC controller PCB (if outside the standards under Method 1); Potential measuring unit, High-voltage transformer 2 (if outside the standards under Method 2)
Lamp intensity control circuit	Voltage (LRD) between J102-B13 and J102-B12 (GND)	The voltage is about 0 V while the scanner is moving forward; otherwise, about 24 V.	DC controller PCB
	Voltage (LINT) between J102-B11 and J102-B12 (GND)	Set to <i>DIRECT</i> in the non-potential control mode. The voltage varies between 10 and 16 V according to 'GLEAM-5H' in the service mode (X 3 X) when the scanning lamp is ON.	DC controller PCB
Primary corona current control circuit	LED1 (high-voltage transformer 1)	The LED remains ON between the start of initial rotation and the start of last rotation.	24VR power supply
	LED3 (high-voltage output; high-voltage transformer 1)		*If normal, the high-voltage transformer, high-voltage cord, or primary corona assembly.
	Voltage (HVTPC) between CP101-1 and J112-9 (GND)	In the non-potential control, the voltage is about 10.3 V*.	DC controller PCB

Block	Checks	Normal	Cause of fault
Transfer corona current control circuit	LED2 (high-voltage transformer 1)	The LED remains ON between the middle of initial rotation and the middle of last rotation.	24VR power supply
	LED4 (high-voltage output; high-voltage transformer 1)		<i>**If normal, high-voltage transformer 1, high-voltage cord, or transfer corona assembly.</i>
Transfer corona current control circuit	Voltage (HVTTC) between CP101-2 and J112-9 (GND)	<i>Make a two-sided copy. The voltage is about 14.2 V while copying on the 1st side and about 14.5 V while copying on the 2nd side.**</i>	DC controller PCB
Pre-transfer corona current control circuit	Voltage (HVPCT) between CP101-4 and J112-9 (-)	The voltage is about 14 V between the middle of initial rotation and the middle of post rotation.	DC controller PCB, AC control PCB
Separation current control circuit	Voltage (ACON) between J101-B11 (+) and J112-9 (-)	The voltage is 0 V between the middle of initial rotation and the middle of post rotation; otherwise, about 10 V.	DC controller PCB, AC transformer
	Voltage (HVSCT) between CP101-5 and J112-9 (-)	The voltage is 12 V between the middle of initial rotation and the middle of post rotation	DC controller PCB, AC control PCB
Developing bias control circuit	Voltage (ACBTP) between J101-B6 (+) and J112-9	The voltage is about 0 V while the scanner is moving forward or in reverse; otherwise, about 20 V.	DC controller PCB
	Voltage (DCBC) between CP101-3 and J112-9 (GND)	In the non-potential control, the voltage is about 7 V during copying operation.	DC controller PCB

9 Checking the Potential Control System





10 Checking the Photointerrupters

The machine allows checks on the photointerrupters using its service mode instead of conventional testers.

1. Using a Tester

- 1) Set the tester to the 30 VDC range.
- 2) Connect the - probe of the tester to J112-9 (GND) on the DC controller PCB.
- 3) Connect the + probe to the terminals (DC controller PCB) shown in the table.
- 4) Make checks.

2. Using the Service Mode

- 1) Open the front door, and insert the door switch actuator into the door switch assembly.
- 2) Press SW503 on the jam location indicator PCB.
- 3) Press *, 2, and then *.
- 4) Enter the address using the up and down keys on the control panel, and make checks.

Notation	Q2		Q3	
Sensor	Lens x home position sensor (LXHP)		Lens y home position sensor (LYHP)	
+ probe	J110-B14		J110-B11	
Address	P019, bit 2		P019, bit 3	
Checks	Put paper over Q2 while in standby.		Put paper over Q3 while in standby.	
	paper present	paper absent	paper present	paper absent
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q4		Q5	
Sensor	Scanner document leading edge sensor (SCDP)		Scanner home position sensor (SCHP)	
+ probe	J102-B8		J102-B5	
Address	P019, bit 1		P04, bit 13	
Checks	Move the scanner by hand while in standby.		Move the scanner by hand while in standby.	
	light-blocking plate at Q4	light-blocking plate not at Q4	light-blocking plate at Q5	light-blocking plate not at Q5
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q6		Q7	
Sensor	Scanner CFF position sensor (SCDP)		Fixing assembly separation claw assembly paper sensor (PDP1)	
+ probe	J102-B2		J103-A6	
Address	P004, bit 14		P001, bit 4	
Checks	Move the scanner by hand while in standby.		Move the detection lever of Q7 by hand while in standby.	
	light-blocking plate at Q6	light-blocking plate not at Q6	detection lever not moved	detection lever not at Q7
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q8		Q9	
Sensor	Cleaning belt length warning sensor (CBOUT)		Cleaning belt length sensor (CBOP)	
+ probe	J103-A9		J103-A10	
Address	—		—	
Checks	Put paper over Q8 while in standby.		Put paper over Q9 while in standby.	
	paper present	paper absent	paper present	paper absent
Display	—	—	—	—
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q10		Q11	
Sensor	Fixing assembly paper sensor (PDP2)		Paper reversal inlet sensor (PDP3)	
+ probe	J103-A12		J102-A5	
Address	P001, bit 5		P001, bit 7	
Checks	Move the detection lever while in standby.		Move the detection lever while in standby	
	detection lever at Q10	detection lever not at Q10	detection lever at Q11	detection lever not at Q11
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q12		Q13	
Sensor	No. 2 feeder assembly inlet sensor (PDP4)		Paper reversal sensor (PDP5)	
+ probe	J102-A2		J117-A8	
Address	P001, bit 10		P001, bit 9	
Checks	Put paper over the detection lever of Q12 while in standby.		Move the detection lever while in standby.	
	paper present	paper absent	detection lever at Q13	detection lever not at Q13
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q14		Q15	
Sensor	Paper reversal outlet sensor (PDP6)		Delivery paper sensor (PDP7)	
+ probe	J117-A11		J117-A14	
Address	P001, bit 8		P001, bit 6	
Checks	Put paper over the detection lever of Q14 while in standby.		Move the detection lever while in standby.	
	paper present	paper absent	detection lever at Q15	detection lever not at Q15
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q16		Q17	
Sensor	No. 2 feeder assembly paper sensor (PDP8)		Side tray lifter position sensor (LTP)	
+ probe	J117-B11		J113-A11	
Address	P001, bit 11		—	
Checks	Put paper over the detection lever of Q16 while in standby.		Move the detection lever while in standby.	
	paper present	paper absent	detection lever not moved	detection lever pushed up
Display	1	0	—	—
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q18		Q19	
Sensor	Side tray paper out sensor (STPE)		Lower tray lifter position sensor (LLTP)	
+ probe	J113-A8		J115-A2	
Address	P004, bit 3		—	
Checks	Move the detection lever while in standby.		Move the detection lever while in standby.	
	detection lever not moved	detection lever pushed up	detection lever not moved	detection lever pushed up
Display	1	0	—	—
Voltage (tester reading)	5V	0V	0V	5V

Notation	Q20		Q21	
Sensor	Lower tray paper sensor (LTPE)		Upper tray lifter position sensor (ULTP)	
+ probe	J115-A2		J115-A8	
Address	P004, bit 0		—	
Checks	Move the detection lever while in standby.		Move the detection lever while in standby.	
	detection lever not moved	detection lever pushed up	detection lever not moved	detection lever pushed up
Display	1	0	—	—
Voltage (tester reading)	5V	0V	0V	5V

Notation	Q22		Q23	
Sensor	Upper tray paper sensor (UTPE)		Lower pick-up feeder sensor (PDP9)	
+ probe	J115-A11		J115-B4	
Address	P004, bit 1		P001, bit 0	
Checks	Move the detection lever while in standby.		Put copy paper over detection lever of Q23 while in standby.	
	detection lever not moved	detection lever pushed up	paper present	paper absent
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q24	
Sensor	Upper pick-up/feeder sensor (PDP10)	
+ probe	J115-B7	
Address	P001, bit 1	
Checks	Put copy paper over the detection lever of Q24 while in standby	
	paper present	paper absent
Display	1	0
Voltage (tester reading)	5V	0V

Notation	Q26		Q27	
Sensor	Re-feed sensor (PDP11)		Holding tray paper sensor (PDP12)	
+ probe	J116-A5		J116-A8	
Address	P001, bit 2		P004, bit 2	
Checks	Move the detection lever while in standby.		Move the detection lever while in standby.	
	detection lever pushed down	detection lever not moved	detection lever pushed down	detection lever not moved
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q28		Q29	
Sensor	Paper guide home position sensor (THP)		Multifeed paper sensor (LPD)	
+ probe	J116-A6		J116-B6	
Address	P019, bit 4		P004, bit 4	
Checks	Put paper over Q28 while in standby.		Move the detection lever while in standby.	
	paper present	paper absent	paper present	paper absent
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q30		Q32	
Sensor	Pre-registration paper sensor (PDP13)		C.F.F. mirror position sensor (MHP)	
+ probe	J118-A2		J110-A12	
Address	P001, bit 3		P004, bit 15	
Checks	Put paper over the detection lever of Q30 while in standby.		Move C.F.F. mirror manually while in standby to block and unblock Q32.	
	Paper present	Paper absent	Paper blocked	Paper unblocked
Display	1	0	1	0
Voltage (tester reading)	5V	0V	5V	0V

Notation	Q33	
Sensor	Re-feeder sensor (PDP14)	
+ probe	J115-B2	
Address	P004, bit 8	
Checks	Put copy paper over the detection lever of Q33 while in standby.	
	paper present	paper absent
Display	1	0
Voltage (tester reading)	5V	0V

L. SELF DIAGNOSIS

The machine is equipped with a self diagnostic mechanism that checks the condition of the ma-

chine (sensors in particular). The mechanism is initiated by the microprocessor on the DC controller PCB and, if an error is identified, displays a corresponding error code.

1. Copier

Code	Cause	Description
E000	• Thermistor (TH1; faulty contact) • Heater (H1, H2; open) • Thermoswitch (TS1; open) • SSR (faulty) • DC controller PCB (faulty)	The temperature of the upper fixing roller does not reach 100°C within 5 min after power-on.
E001	• Thermistor (TH1; shorted) • SSR (faulty) • DC controller PCB (faulty)	The temperature of the upper fixing assembly remains 230°C or more for 5 sec or more.
E002	• Thermistor (TH1; faulty contact, open) • Heater (H1, H2; open) • Thermal switch (TS1; open) • SSR (faulty) • DC controller PCB	The temperature of the upper fixing roller does not reach 180°C within 5 min after it has exceeded 100°C.
E003		The temperature of the upper fixing roller is below 100°C or less for 5 sec after it has reached 180°C.
E005	• Cleaning belt (fixing assembly; taken up) • Cleaning belt sensor (Q8, Q9; faulty) • DC controller PCB (faulty)	• The length of the cleaning belt taken up (fixing assembly) is more than a specified length.
E010	• Main motor (faulty) • Main motor driver PCB (faulty) • DC controller PCB (faulty)	In response to the main motor drive signal, two or more clock pulses are not generated within 1 sec.
E013	• Waste toner feeder screw (faulty) • DC controller PCB (faulty)	When rotation of the waste toner feeder screw becomes disabled and the sensor switch (SW20) is pressed.
E020	• Hopper motor (faulty) • Black toner level sensor circuit (faulty) • DC controller PCB (faulty) • Hopper toner sensor (faulty)	• During copying operation, the black toner supply signal is '0' (no toner) for 3 min or more. • At time of installation, the black toner supply signal does not go '1' within 6 min during black toner supply sequence.

Code	Cause	Description
E030	- Counter (open) - DC controller PCB (faulty)	A counter open circuit is identified when counter drive is OFF.
E050	Duplexing Unit - Paper guide home position sensor (faulty) - Paper guide motor (faulty) - DC controller PCB (faulty)	- The tray home position signal (THP) is not generated within 4 sec while the paper guide motor drive signal is generated. - The tray home position signal (THP) is generated 2 sec or more while the paper guide motor drive signal is generated.
E203	- Scanner home position sensor (faulty) - DC controller PCB (faulty)	The scanner home position signal (SCHP) is generated 2 pulses or more within 0.5 sec when the scanner motor is turned ON.
E2 10	- Lens X home position sensor (Q2; faulty) - Lens X drive motor (M9 ; faulty) - DC controller PCB (faulty)	- The lens x home position signal (LXHP) is not generated within 9 sec after the power switch or the door switch is turned ON. - The lens x home position signal (LXHP) is generated for 2 sec or more.
E2 12	- Lens Y home position sensor (Q3; faulty) - Lens Y drive motor (M10; faulty) - DC controller PCB (faulty)	- The lens y home position signal (LYHP) is not generated within 9 sec after the power switch or the door switch is turned ON. - The lens y home position signal (LYHP) is generated for 2 sec or more.
E7 10	DC controller PCB (faulty)	Q124 on the DC controller PCB cannot be initialized at power-on.
E7 11	DC controller PCB (faulty)	Q124 on the DC controller is faulty after power-on.
E7 12	Feeder - RDF-A1 controller PCB (faulty) - Connector (faulty connection) 24V power supply (faulty)	The communication IC on the RDF-A1 controller is faulty.

Code	Cause	Description
E715	C.F.F. • C.F.F. controller PCB (faulty) • Connector (faulty connection) • 24V power supply (faulty)	The communication IC on the C.F.F. controller PCB is faulty.
E800	• Auto power-off mechanism (open) • DC controller	• An open circuit is identified in the auto power-off mechanism. • The auto power-off signal is generated twice or more in 2 sec.
Codes not shown; keys on control panel locked.	• Scanner motor (faulty) • Scanner home position sensor (faulty) • Scanner motor driver PCB (faulty) • DC controller PCB (faulty)	• The scanner home position signal (SCHP) is not generated within 10 sec after the power switch or the COPY START key is turned ON.
	• Scanner motor (faulty) • Scanner document leading edge sensor (faulty) • Scanner motor driver PCB (faulty) • DC controller PCB (faulty)	• The scanner document leading edge signal (SCDP) is not generated within 0.8 sec after the scanner has started to move forward. • The scanner document leading edge signal (SCDP) is not generated within 1 sec after the scanner has started to move in reverse.
	• Scanner motor (faulty) • C.F.F. home position sensor (faulty) • Scanner motor driver PCB (faulty) • DC controller PCB	• The C.F.F. position sensor is not generated within 10 sec after the COPY START key is pressed with the C.F.F. in use.

To reset after the diagnostic mechanism has been activated, switch the machine OFF. In the case of E000, E001, E002, D003, or E020, however, the machine will not be reset by this operation; this is to protect the fixing roller from heat damage, which otherwise is likely if the thermistor has melted. Data on E000, E001, E002, E003, or E020 are retained in RAM on the DC controller, necessitating initialization of RAM.

- 1) Enter the service mode (* 4 *).
- 2) Select 'ERROR' using the up or down key.
- 3) Press the OK key to clear the error indication.

2. RDF

Code	Cause	Description
E400	Data communication (with copier)	The communication with the copier is absent for 5 s or more; monitored at all times.
E401	- Pick-up motor (M4; no rotation) - Pick-up roller sensor (S3; faulty)	A flag is attached to the shaft of the pick-up motor (M4); the rotation of the motor is monitored in relation to the presence of the flag over the pick-up roller sensor (S3) S3 does not go ON and OFF twice or more within 1 sec.
E402	- Belt motor (M3; no rotation) - Belt motor clock sensor (S2; faulty)	The number of belt clock pulses within 200 ms is below a specific value.
E403	- Feeder motor (M5; no rotation) - Feeder motor clock sensor (S5; faulty)	The number of feeder motor clock pulses within 200 ms is below a specific value.
E404	- Delivery motor (M3; no rotation) - Delivery motor clock sensor (S10; faulty)	The number of delivery motor clock pulses within 200 ms is below a specific value.
E405	Pick-up motor clock sensor (S1; faulty)	The number of pick-up motor clock pulses within 200 ms is below a specific value.
E406	- Side guide motor (M7; no rotation) - Side guide motor driver (faulty)	The value of VR101 and that of VR102 are not the same within 5 sec after the side guide motor drive signal is generated; i.e., the guide shift is not complete.
E407	- Document tray motor (M1; no rotation) - Document tray position sensor (S11; faulty)	The document tray position sensor does not go ON or OFF within 2 sec after the document tray motor drive signal is generated; i.e., the document tray shift is not complete.

Code	Cause	Description
E411	- Document detection sensor (PTR3; faulty) - Registration sensor (PTR2; faulty) - Skew sensor (PTR1; faulty) - Document end sensor (PTR4; faulty)	The output of the sensor is 2.3 V or more in the absence of paper.
E431	- Sub registration sensor (PTR15; faulty) - Sub document sensor (PTR52; faulty) - Sub feeder motor (M51; faulty)	- The output of the sensor is 2.3 V or more in the absence of paper. - The number of sub feeder motor clock pulses within 200 ms is below a specific value.

Note:

To clear the errors, switch the copier OFF and then ON. Copies may still may be made even when the RF is out of order; open the RF, and set the document on the copier's copyboard.

Note:

If a code in the 400s or E712 is indicated, the machine executes self diagnosis once again when it is switched OFF and then ON again; then, it indicates 'FEEDER NOT AVAILABLE'. To continue making copies, use the feeder as the copyboard cover.

3. Sorter

Code	Cause	Description
E500	The CPU (Q1) or the communication IC (Q3) on the sorter controller is not functioning normally.	The communication between the sorter and the copier has an error.
E510	Feeder motor (M1; no rotation)	The clock signal from the motor is OFF for 250 ms or more.
E513	The tandem feeder motor (M6; no rotation)	The clock signal from the motor is OFF for 250 ms or more.
E530	Staple guide bar swing motor (M3; no rotation)	The home position sensor (P17) does not go OFF even after 2560 pulses of the motor drive signal has been generated.
E531	Stapler unit swing motor (M5; no rotation)	- The stapler unit swing sensor (MS9) does not go OFF within 500 ms after the motor drive signal has been generated. - MS9 does not go ON again within 1000 ms after it has gone OFF.
E540	Bin shift motor (M2)	- The lead cam home position sensor (PI2) does not go OFF within 2000 ms after the motor drive signal has been generated. - PI2 does not go ON once again within 2000 ms after it has gone OFF.

■ Resetting

If the error occurred during copying operation,

- ① indicates 'JAM'.
jam reset
- ② indicates 'SWITCH POWER ON'.
switch OFF and then ON
- ③ resets if result of self check is OK; down* if NG, indicating 'E5XX' on copier control panel.

If the error occurred not during copying operation,

- ① indicates 'SWITCH POWER ON'.
switch OFF and then ON
- ② resets if result of self check is OK; down* if NG, indicating 'E5XX' on copier control panel.

Down State

- ① indicates "E5XX".
sorter detached**
- ② enables operation without sorter modes.
if sorter modes selected,
- ③ indicates 'NO SORTER MODE AVAILABLE'.

- In the down state, the machine will reset itself when it is switched OFF and then ON and if the result of its self check is good; do this with the sorter connected to the copier.

* State in which an "E" code is indicated.

** Instead of physically detaching the sorter, the joint sensor (MS1) may be turned OFF; the connector may remain connected.

D. Self Diagnosis of C.F.F.

E441	• C.F.F. motor (faulty) • C.F.F. motor clock sensor (P12; faulty) • C.F.F. controller PCB	The microprocessor on the C.F.F. controller PCB cannot detect clock pulses when the C.F.F. motor drive signal is being generated.
E442	• heat exhaust fan (FM1, FM2; faulty) • rotation sensor (fan; faulty) • C.F.F. controller PCB	The rotation sensor signal (FM1A or FM2A) does not go '0' even when the fan drive signal is being generated.
E446	• C.F.F. mirror motor (M15; faulty) • C.F.F. mirror position sensor (Q32; faulty) • DC controller PCB (copy; faulty)	The mirror position sensor output does not change from '1' to '0' and then to '1' even when the mirror drive signal is being generated.
E447	• C.F.F. position (faulty) • C.F.F. home position sensor (MS4; faulty)	This applies to a machine with a sorter and with the C.F.F. not in use; the C.F.F. moves away from the home position while copies are being made.

■ Resetting

To reset the machine, switch the copier OFF and then ON.

This, however, does not work for E477, indicating that the C.F.F. is away from the home position and the power to the sorter has been cut off; to reset, return the C.F.F. to the home position and then switch the copier OFF and then ON.

CHAPTER 4

MECHANICAL

1. Disconnect the power cord for safety before disassembly or reassembly work. 2. Group the screws by type (length and diameter) and location. 3. The fixing screws for the grounding wire and varistors is fitted with a washer to ensure electric continuity; be sure to use the washer for reassembly. 4. One of the mounting screws of the rear cover is fitted with a washer to protect against static electricity; be sure to use the washer for reassembly. 5. If possible, avoid operating the machine with any of its parts removed. 6. Unless otherwise noted, re-assembly is the reverse of disassembly. 7. When detaching the duplexing unit or the fixing assembly, be sure to turn the front door switch or the power OFF.	
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I. EXTERNALS

A. External Covers

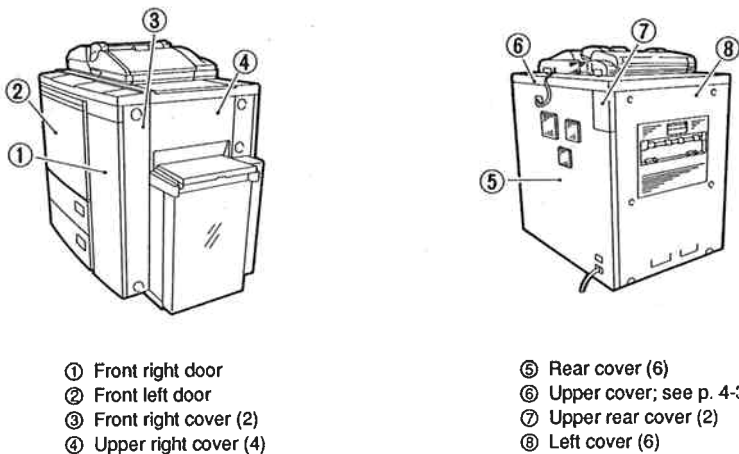


Figure 4-101

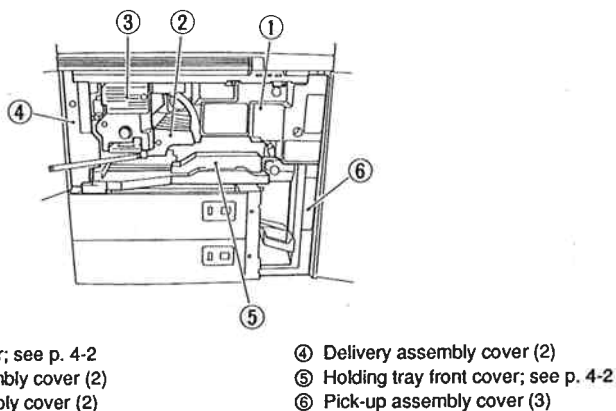


Figure 4-102

Note:

The number in parentheses indicates the number of mounting screws.

Detach the covers as necessary for cleaning, inspecting, or repairing the inside of the machine.

Covers that can be detached by mere removal of the screws are left out of the procedure.

1. Detaching the Process Cover

- 1) Open the front door.
- 2) Slide out the holding tray assembly ①, and shift the jam release lever ② in the direction of the arrow.

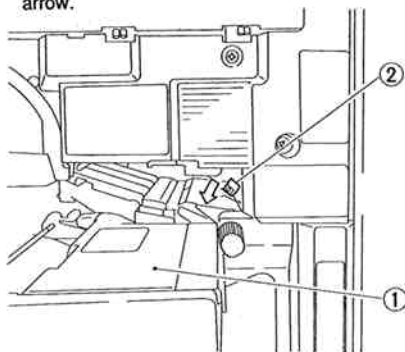


Figure 4-103

- 3) Remove the three mounting screws, and detach the process cover.

2. Detaching the Pick-Up Assembly Cover

- 1) Open the front door.
- 2) Remove the three mounting screws, and detach the jam release grip ① and the jam release handle ②.



Figure 4-104

- 3) Remove the three mounting screws, and lift the pick-up assembly cover to detach.

3. Detaching the Holding Tray Front Cover

- 1) Open the front door, and slide out the holding tray.
- 2) Remove the two mounting screws.
- 3) Hold the holding tray release lever, and detach the holding tray front cover.

4. Detaching the Upper Cover

- 1) Disconnect the RDF-A1's connector, and detach the RDF-A1 from the copier; open the RDF-A1 fully until it is perpendicular with the copier before detachment.

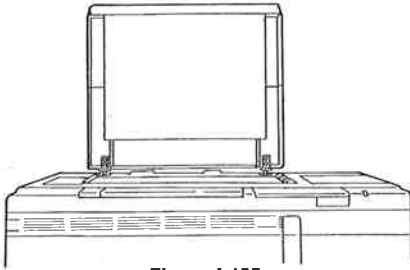


Figure 4-105

- 2) Remove the two mounting screws ①, and detach the white plate cover ②.

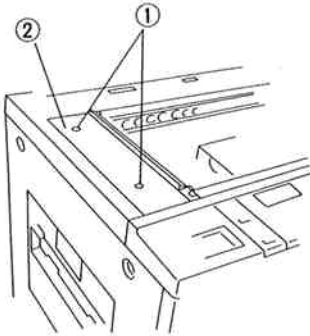


Figure 4-106

- 3) Remove the two mounting screws from the copyboard glass retainer, and detach the copyboard glass.
- 4) Remove the screw ③, and detach the magnet plate ④.
- 5) Detach the cap ⑤ at the rear, and remove the mounting screw from the cap.

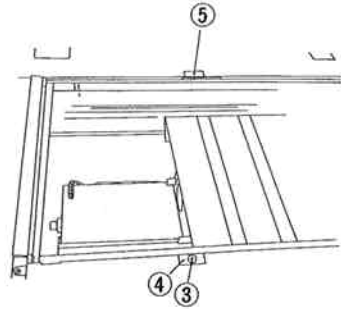


Figure 4-107

- 6) Detach the control panel; see p. 4-5.
- 7) Remove the four mounting screws, and detach the upper right cover.
- 8) Remove the six mounting screws, and detach the rear cover.
- 9) Detach the bushes (left, right) that hold the RF-A1's feet; pick the bottom of each bush, and push it up to detach.
- 10) Loosen the mounting screw ⑥ on the left end plate.

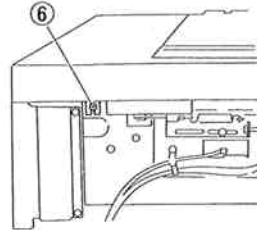


Figure 4-108

- 11) Open the toner hopper cover ⑧, remove the two screws ⑦, and detach the cover; then, detach the upper cover.

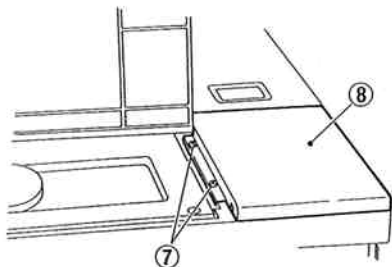


Figure 4-109

B. Control Panel

1. Detaching the Control Panel from the Copier

- 1) Remove the four mounting screws, and detach the upper front cover.
- 2) Remove the five mounting screws ①.

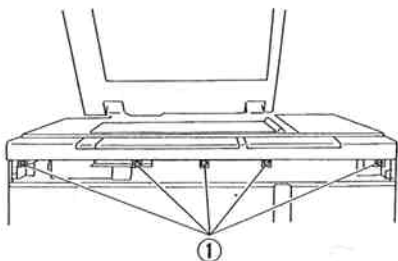


Figure 4-110

- 3) Remove the six mounting screws, and detach the left cover.
- 4) Remove the mounting screw ② from the top of the upper end plate.

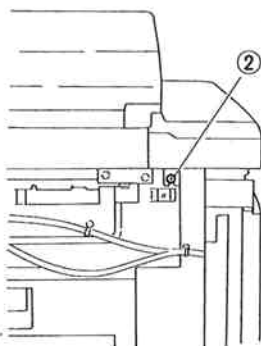


Figure 4-111

- 5) Remove the two mounting screws, and detach the front right cover.
- 6) Remove the mounting screw ③ from the top of the right end plate.

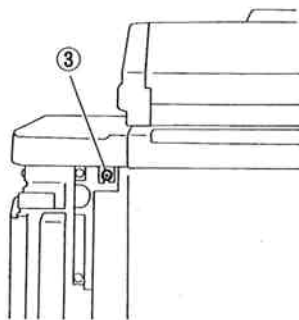


Figure 4-112

- 7) Turn over the control panel, and disconnect the two connectors from the PCB; then, detach the control panel.

2. Notes on Disassembly/Reassembly of the Control Panel

- 1) Keep your hands off the switches on the PCB.
- 2) When reassembling the machine, place the plastic sheet between the cover and the PCB without fail.
- 3) Pay attention to avoid dust entering the back side of the liquid crystal display.
- 4) Use the specified number of screws to mount the PCBs.
- 5) The screws used for mounting the PCB are the self-tapping screws; do not overtighten the screws.

C. Door Switch Assembly

1. Detaching the Front Door Switch Assembly

- 1) Open the front door, and remove the four mounting screws; then, detach the upper front cover.
- 2) Remove the two mounting screws ② from behind the door switch stay ①, and detach the door switch assembly from the stay.

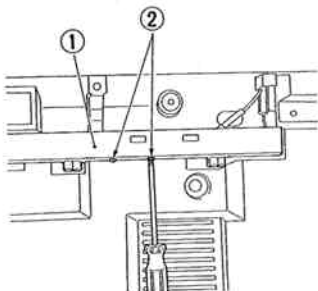


Figure 4-113

- 3) Detach the six door switch harnesses, and detach the door switch assembly.

2. Detaching the Delivery Door Switch Assembly

- 1) Open the delivery door and the front door; remove the two mounting screws, and detach the delivery assembly cover.
- 2) Remove the three screws ① and the six fastons from the door switch mount, and detach the delivery door switch assembly ②.

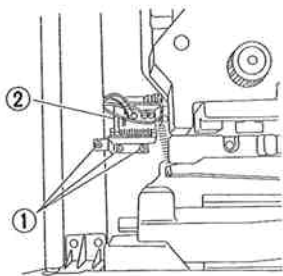


Figure 4-114

D. Fans

1. Detaching the Scanner Cooling Fan

- 1) Detach the control panel; see p. 4-5.
- 2) Remove the two mounting screws ①, and detach the fan cover ②.

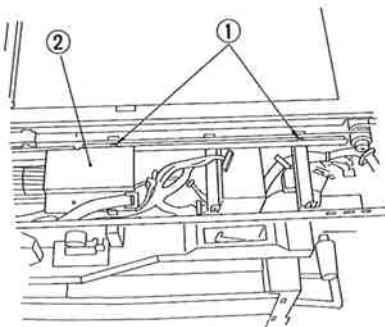


Figure 4-115

- 3) Remove the two mounting screws ③; pay attention to the lens drive cable at the front. Disconnect the connector ④, and detach the scanner cooling fan ⑤.

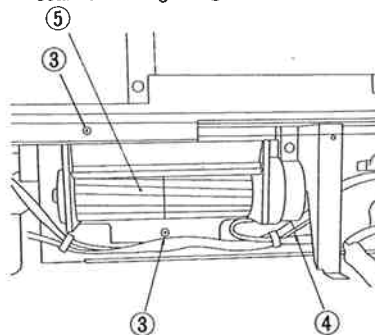


Figure 4-116

2. Detaching the Fixing Heat Exhaust Fan, Exhaust Fan, and Power Supply Cooling Fan

- 1) Detach the rear cover.
- 2) Remove the two mounting screws, and disconnect the connector; then, detach the fixing heat exhaust fan ①.
- 3) Remove the two mounting screws, and disconnect the connector; then, detach the exhaust fan ②.
- 4) Remove the mounting screw, and disconnect the connector; then, detach the power supply cooling fan assembly ③ together with the fan stay.

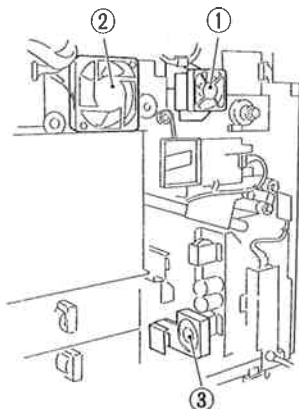


Figure 4-117

3. Detaching the Feeder Fan

- 1) Detach the rear cover.
- 2) Remove the two mounting screws, and open the DC controller PCB assembly.
- 3) Remove the two mounting screws ①, and disconnect the connector ②; then, detach the feeder fan assembly.

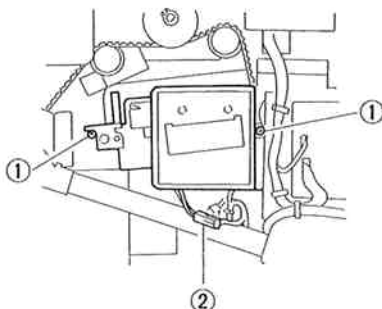


Figure 4-118

4. Detaching the Developing Fan

- 1) Detach the rear cover.
- 2) Remove the two mounting screws, and open the DC controller PCB assembly.
- 3) Remove the four mounting screws ① and disconnect the three connectors ② from the scanner motor driver PCB support plate; then, detach the scanner motor driver PCB ③ together with the support plate.

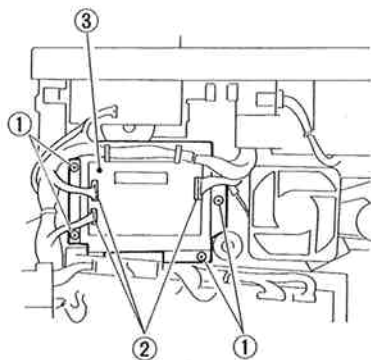


Figure 4-119

- 4) Remove the two mounting screws ④, and disconnect the relay connector ⑤; then, detach the developing fan assembly ⑥.

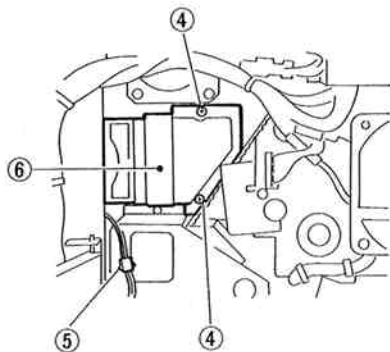


Figure 4-120

E. Detaching the Power Cord Mount

- 1) Detach the rear cover.
- 2) Remove the three mounting screws ①.
- 3) Disconnect the four connectors ②, and lift the power cord mount ③ slightly to detach.

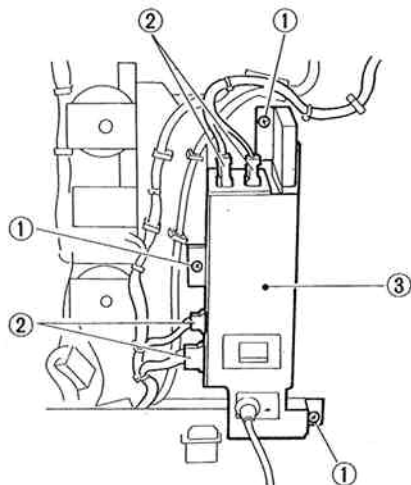


Figure 4-121

F. Detaching the Counter Assembly

- 1) Detach the pick-up assembly cover; see p. 4-2.
- 2) Remove the mounting screw ①, and disconnect the connector ②; then, detach the counter assembly ③ together with the support plate.

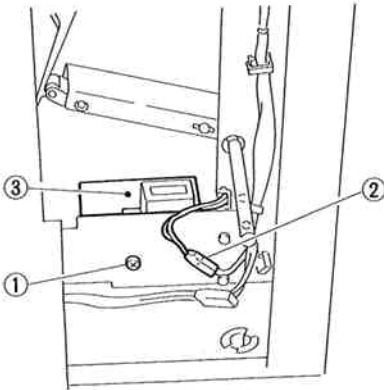


Figure 4-122

II. DRIVE SYSTEM

A. Scanner Drive Assembly

- 1) Detach the upper cover and the rear cover; see p. 4-3.
- 2) Remove the four mounting screws ①, and detach the scanner motor upper cover ②.

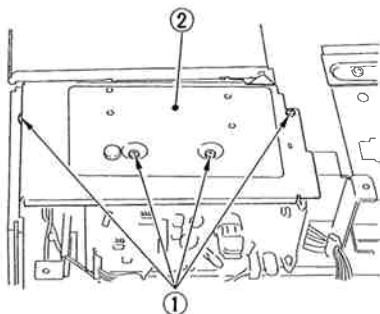


Figure 4-201

- 3) Disconnect the connector ③.

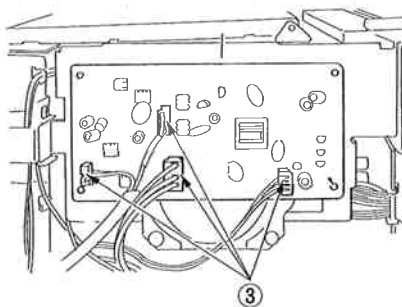


Figure 4-203

- 4) Remove the four mounting screws ④, and detach the potential measuring PCB support plate ⑤.

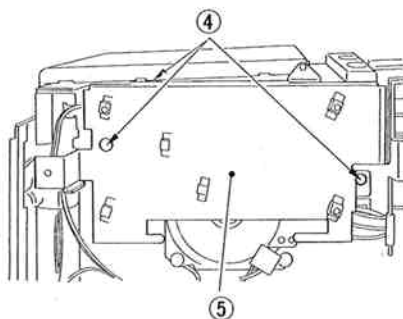


Figure 4-204

- 5) Disconnect the connector ⑥ of the scanner drive motor ⑦.

- 6) Remove the four mounting screws ⑧, and detach the scanner drive motor ⑦; detach the drive belt from the motor shaft gear when detaching the motor.

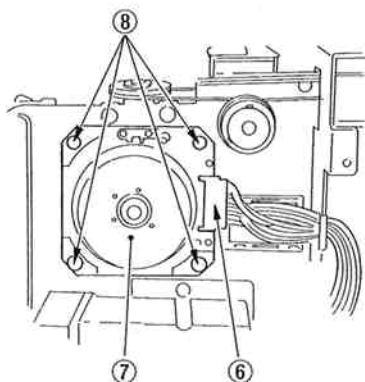


Figure 4-205

2. Diagram of Scanner Drive Cable

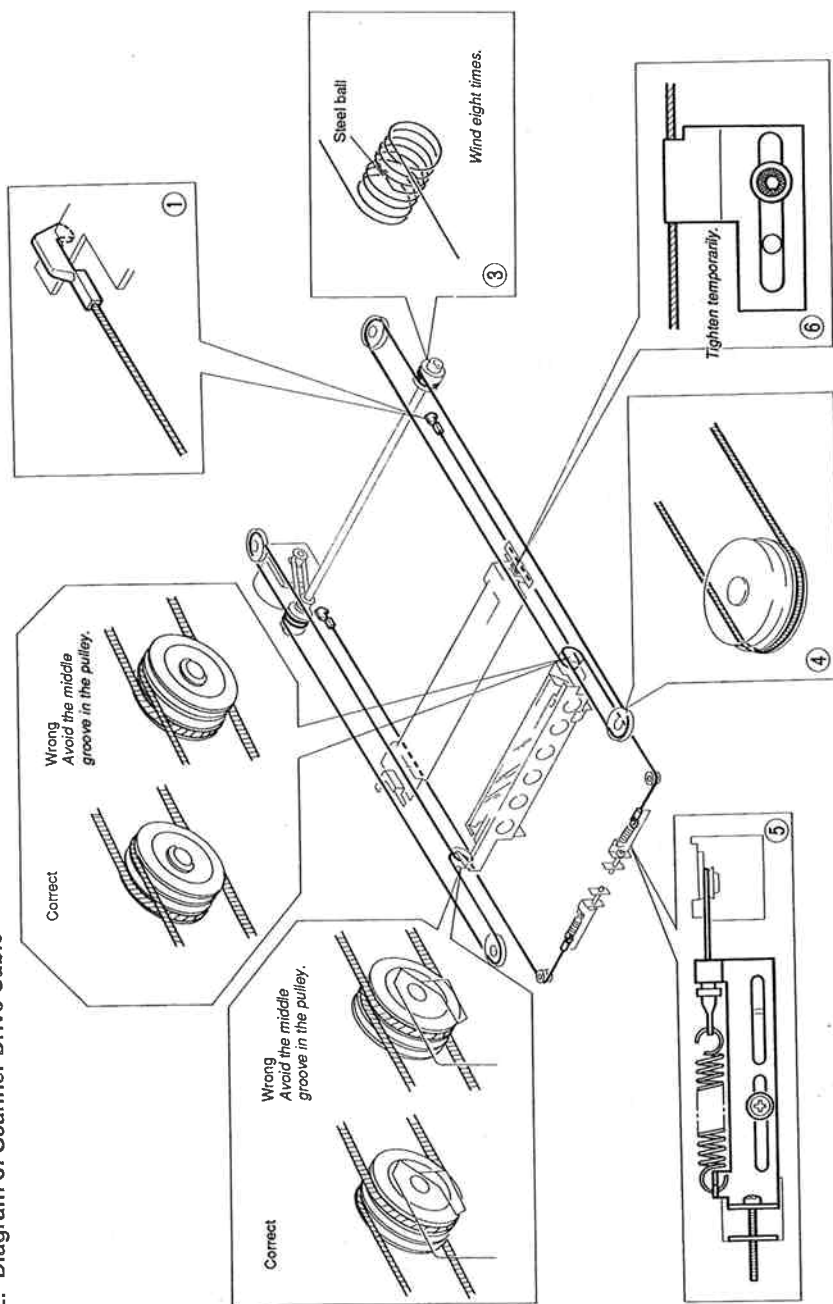


Figure 4-206

3. Adjusting the Tension of the Scanner Drive Cable

Be sure to adjust the tension of the scanner drive cable after routing the cable.

- 1) Remove the six mounting screws, and detach the left cover.
- 2) Loosen the fixing screw on the tension spring bracket.
- 3) Turn the adjusting screw until the distance a in Figure 4-207 is as follows:
 - if you have newly replaced the wire, 1.0 ± 0.5 mm.
 - if the wear is excessive, 0.5 to 35 mm.

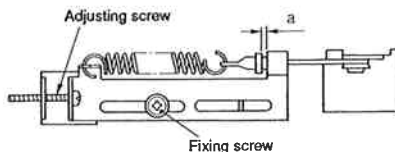


Figure 4-207

Note:

A clockwise turn of the adjusting screw increases the distance, thereby increasing the tension.

- i. Make sure that the scanner drive cable is free of twists and it does not override the pulley.
- ii. Move the No. 1 and No. 2 mirror mounts by hand to make sure that they move smoothly; do not touch the reflector plate.

4. Adjusting the Position of the Mirrors (optical length of No. 1 and No. 2/No. 3 mirrors)

- 1) Move the No. 1 mirror mount and the No. 2 mirror/No. 3 mirror mount to the left.
- 2) Set the mirror positioning tools as shown below; TKN-0509 at front, TKN-0510 at rear.

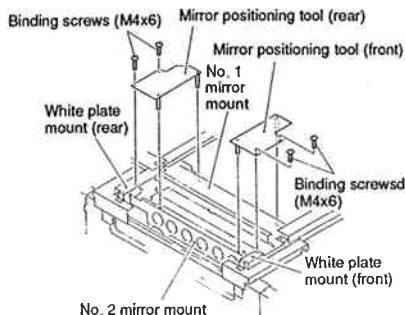


Figure 4-208

- 3) Tighten the screw on the clamps that fixes the scanner cable to the No. 1 mirror mount.

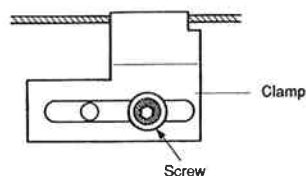


Figure 4-209

- 4) Detach the positioning tools.

4. Adjusting the Scanner Home Position

Select 'BRAKE_SC' in the service mode ($\boxed{*}\boxed{3}\boxed{*}$). Insert a ruler into the hole to which the CFF home position sensor is fitted, and use the numeric keypad to enter a setting so that the scanner stops 33.5 ± 1.0 mm from the left endplate; then, press the OK key.

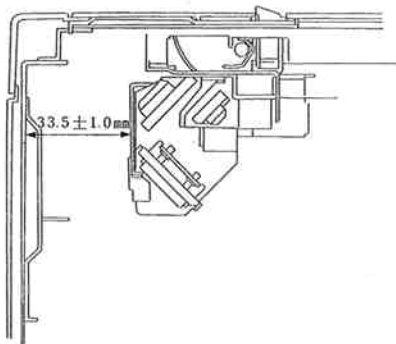


Figure 4-210

B. Lens Drive Assembly

Note:

The zoom lens and the lens base drive motor must not be turned on while the lens fixing is attached to the lens stage; or, moving the lens or the lens base while the power plug is connected can damage the gear on the output shaft. Take note of the following:

- i. Be sure to detach the lens fixing from the lens base before connecting the power plug at time of machine installation.
- ii. Be sure to disconnect the power plug before moving the lens base or the zoom lens by hand. Further, be sure to move them slowly with care.

1. Detaching the Lens Y Drive Motor

- 1) Detach the copyboard glass retainer, and detach the copyboard glass.
- 2) Remove the three mounting screws ①, and detach the lens cover ②.

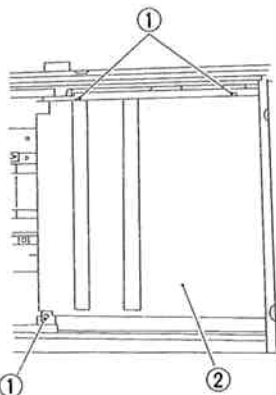


Figure 4-211

- 3) Remove the two mounting screws ③, and detach the light-blocking plate assembly ④ at the rear from the x drive belt cover; the light-blocking plate is snapped on the x drive belt cover.

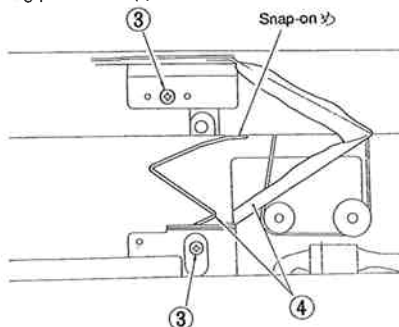


Figure 4-212

- 4) Mark the position of the y belt gear support plate ⑤ at the rear using a scriber.
- 5) Loosen the two mounting screws ⑥ on the y belt gear support plate ⑤ to loosen the y drive belt ⑦.

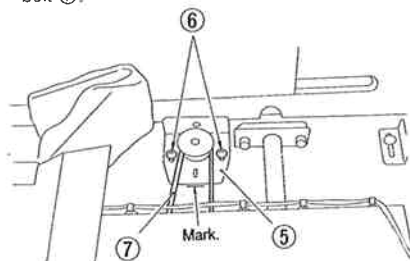


Figure 4-213

- 6) Detach the y drive belt from the y motor gear.
- 7) Remove the two mounting screws ⑧, and disconnect the connector ⑨; then, detach the lens y drive motor together with the support plate ⑩.

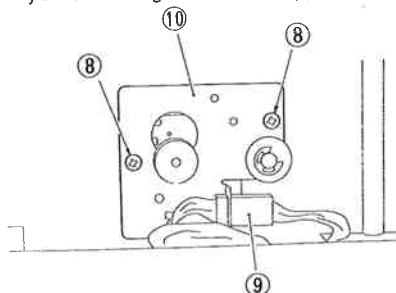


Figure 4-214

- 8) Remove the two mounting screws, and detach the motor from the support plate.

Note:

Push the light-blocking plate toward inside when attaching the lens cover so that the plate will be secured to the lens cover.

2. Lens X Drive Motor

- 1) Remove the copyboard glass retainer, and detach the copyboard glass.
- 2) Remove the three mounting screws ①, and detach the lens cover ②.

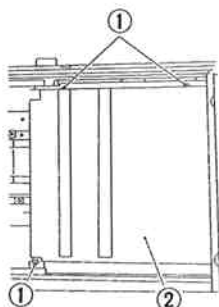


Figure 4-215

- 3) Remove the two mounting screws ③, and detach the light-blocking plate assembly ④ at the front from the x drive belt cover; the light-blocking plate is snapped on the x drive belt cover.

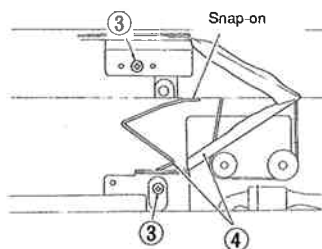


Figure 4-216

- 4) Remove the two mounting screws ⑤, and detach the x drive belt cover ⑥.

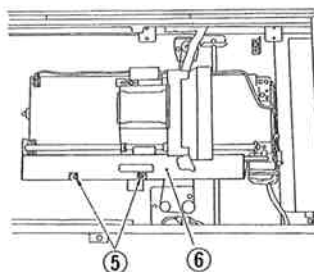


Figure 4-217

- 5) Remove the two mounting screws ⑦ from the x drive motor support plate, and disconnect the connector ⑧.

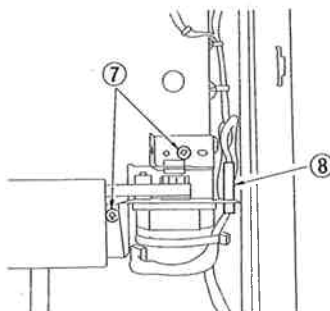


Figure 4-218

- 6) Detach the x drive belt from the drive gear at the left.
- 7) Remove the two mounting screws, and detach the x drive motor from the support plate while detaching the x drive belt.

Note:

Push the light-blocking plate toward inside when attaching the lens cover so that the plate will be secured to the lens cover.

C. Main Motor Assembly

1. Detaching the Main Motor Assembly

- 1) Detach the rear cover, and detach the exhaust fan.
- 2) Loosen the two mounting screws ① to decrease the tension of the drive belt ②; see Figure 4-219.
- 3) Remove the grip ring ③, and detach the gear ④.

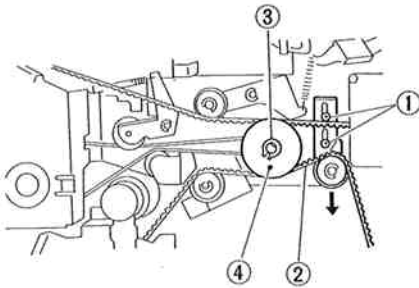


Figure 4-219

- 4) Push up the tension pulley assembly, detach the drive belt ⑥ from the pulley ⑤; then, decrease the tension of the belt.
- 5) Detach the drive belt ⑥ from the gear ⑦; then, detach the gear ⑦ from the main motor spindle ⑧.

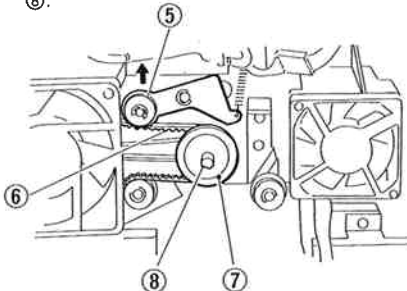


Figure 4-220

- 6) Detach the spring ⑨, and decrease the tension of the drive belt ⑩.

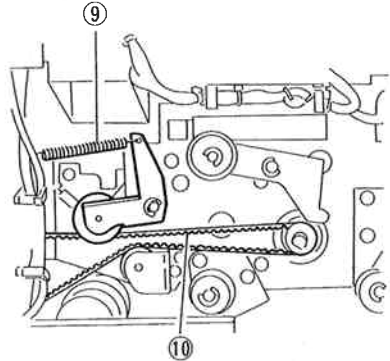


Figure 4-221

- 7) Disconnect J242 ⑫ and J243 ⑬ from the main motor controller PCB ⑪.

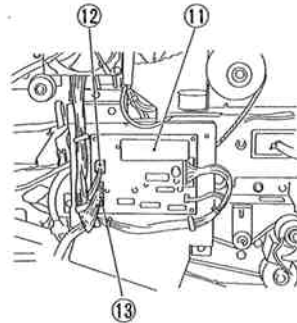


Figure 4-222

- 8) Remove the four mounting screws (14), and detach the main motor from the front.

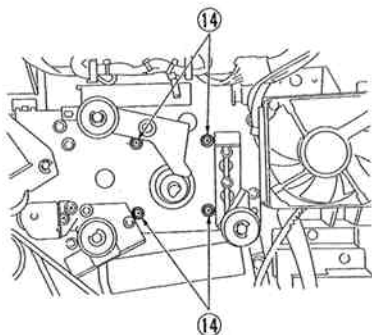


Figure 4-223

Note:

Keep the motor fully to the delivery assembly when attaching it back to the copier.

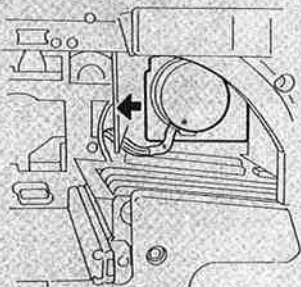


Figure 4-224

D. Drum Developing Assembly Drive Assembly

1. Construction

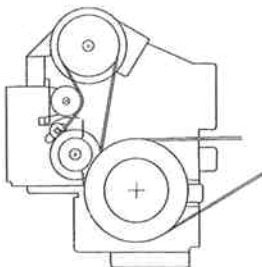


Figure 4-225

2. Detaching the Drum Developing Drive Assembly

- 1) Open the front door, and detach the drum unit from the copier; see p. 4-56.
- 2) Detach the rear cover, and remove the two screws; then, open the DC controller PCB assembly.
- 3) Remove the four mounting screws, disconnect the connector, and detach the scanner motor driver PCB; see p. 4-26.
- 4) Remove the two mounting screws, and disconnect the connector; then, detach the exhaust fan.
- 5) Detach the high-voltage cable from the harness retainer of the drum developing drive assembly.
- 6) Detach the two springs ② from the tension pulley assembly ① of the drive belt; then, loosen the mounting screw ③ to decrease the tension of the belt.

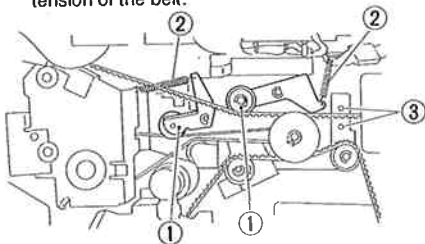


Figure 4-226

- 7) Remove the four mounting screws ④, and detach the drum developing drive assembly ⑤ while detaching the drive belt from the gear.

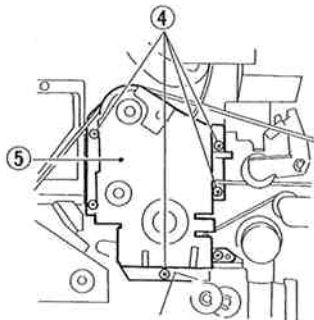


Figure 4-227

3. Adjusting the Tension of the Drive Belt

Adjust the tension of the drive belt inside the drum developing drive assembly until it is as shown.

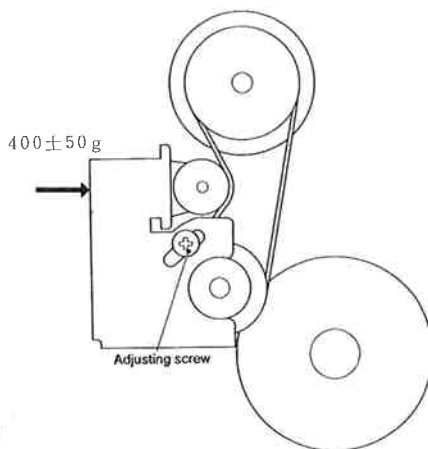


Figure 4-228

E. Pick-Up Drive Assembly

1. Construction

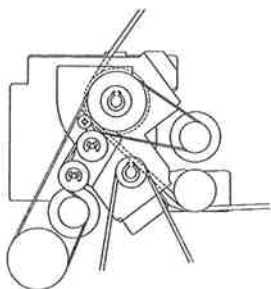


Figure 4-229

2. Detaching the Pick-Up Drive Assembly

- 1) Detach the multifeeders from the copier; see p. 4-30.
- 2) Detach the rear cover, and remove the two screws; then, open the DC controller PCB assembly.
- 3) Remove the four mounting screws, disconnect the connector, and detach the scanner motor driver PCB; see p. 4-26.
- 4) Remove the two mounting screws, and disconnect the connector; then, detach the exhaust fan.
- 5) Detach the spring ① from the tension pulley assembly, and detach the drive belt ② from the pulley ③.

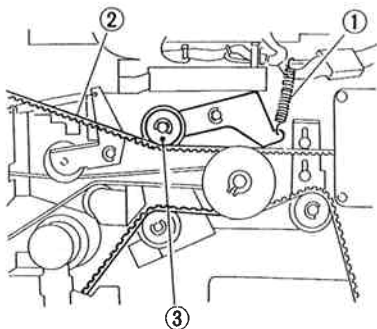


Figure 4-230

- 6) Detach the spring ⑤ from the tension pulley assembly ④, and loosen the tension of the drive belt ⑥; see Figure 4-231.
- 7) Loosen the mounting screw ⑦ to loosen the drive belt in the pick-up drive assembly ⑨.
- 8) Remove the four mounting screws ⑧, and detach the pick-up drive assembly cover.

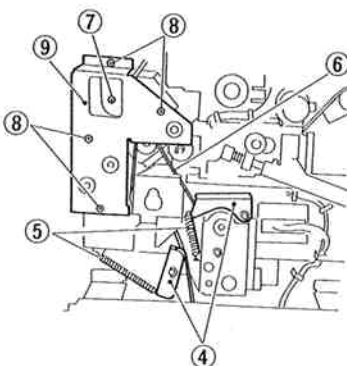


Figure 4-231

- 9) Remove the belt loosened in step 7).
- 10) Remove the three screws ⑩, and detach the spring mount ⑪.

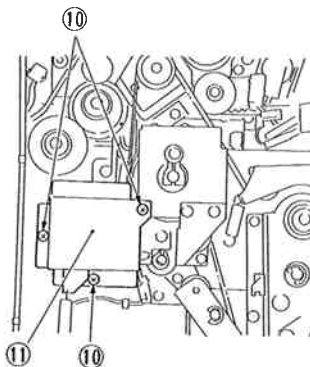


Figure 4-232

- 11) Remove the drive belt ⑭ from the gear ⑮.

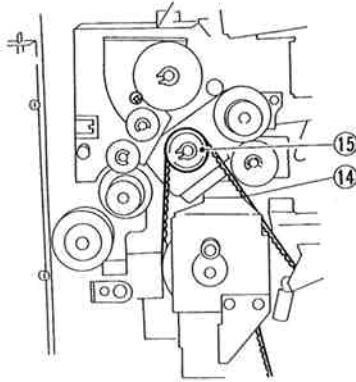


Figure 4-233

- 12) Remove the four mounting screws ⑯, and lift the pick-up drive assembly ⑰ to detach while detaching the belt from the gear.

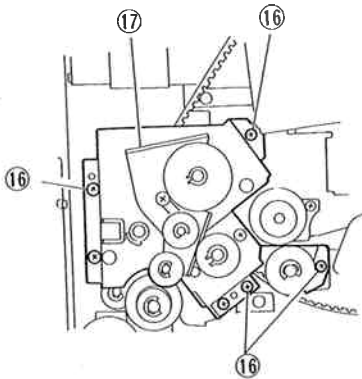


Figure 4-234

3. Detaching the Front Tray Pick-Up Clutch

- 1) Detach the rear cover, and remove the two mounting screws; then, open the DC controller PCB assembly.
- 2) Remove the four mounting screws, and detach the DC power supply PCB together with the support plate.
 - If removing upper front tray pick-up clutch,
- 3) Remove the tension adjusting spring ① and four mounting screws ②; then, detach the bearing stop plate ③.

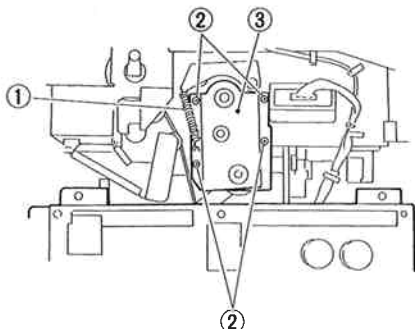


Figure 4-237

- 4) Detach the bearing ④ and the four washers; then, remove the E-ring. If for the pick-up clutch of the lower front tray, remove the E-ring ⑤ only.

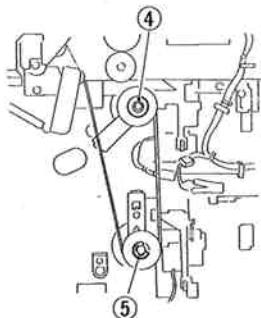


Figure 4-238

- 5) Loosen the hex screw on the bushing of the clutch, then, disconnect the connector, and detach the clutch together with the gear.

■ Points to Note When Attaching the Front Tray Pick-Up Clutch

- When attaching the clutch,
 - 1) Attach the clutch aligning the boss at the rear of the clutch with the stop plate.

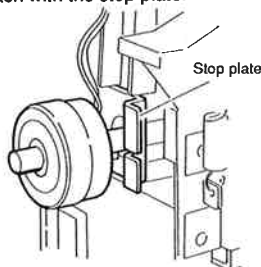


Figure 4-239

- When attaching the clutch to the shaft,
 - 2) Push the clutch in the direction of the arrow shown in Figure 4-240, and tighten the hex screw with the E-ring and the clutch pulley in contact with each other.

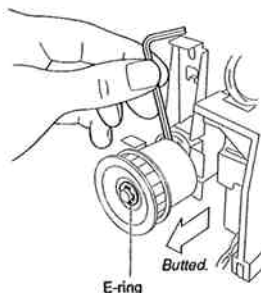


Figure 4-240

F. Front Tray Lifter Drive Assembly

1. Construction

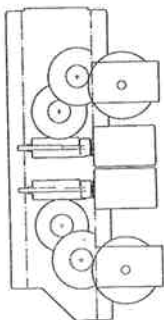


Figure 4-241

2. Detaching the Front Tray Lifter Drive Assembly

- 1) Detach the rear cover, and detach the power cord mount; see p. 4-8.
- 2) Push the front tray release solenoid ① to release the front tray; see Figure 4-242.
- 3) Detach the harness from the harness guide ②, and disconnect the two connectors from the lifter motor ③; see Figure 4-242.
- 4) Remove the four mounting screws ④, and detach the front tray lifter drive assembly.

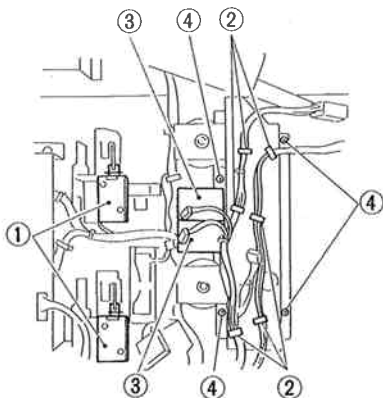


Figure 4-242

G. Fixing Drive Assembly

1. Construction

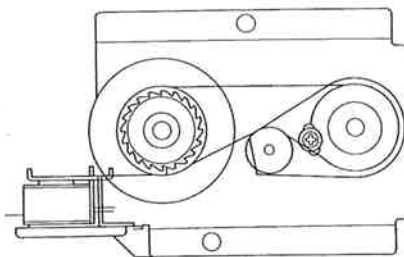


Figure 4-243

2. Detaching the Fixing Drive Assembly

- 1) Detach the rear cover, and open the delivery door.
- 2) Loosen the two mounting screws ② on the tension pulley assembly ① to decrease the tension of the drive belt ④ on the main motor gear ③.

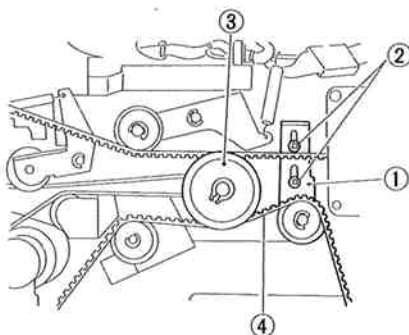


Figure 4-244

- 3) Disconnect the three connectors from the lamp regulator PCB ⑤; then, pick the locking support ⑥, and detach the lamp regulator PCB ⑤.

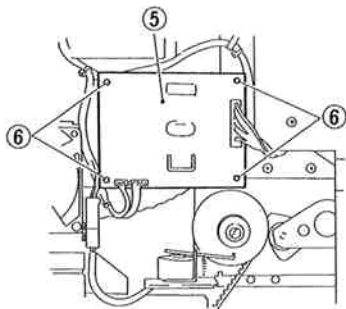


Figure 4-245

- 4) Remove the three mounting screws ⑦, and detach the fixing drive assembly ⑧ while detaching the drive belt from the gear.

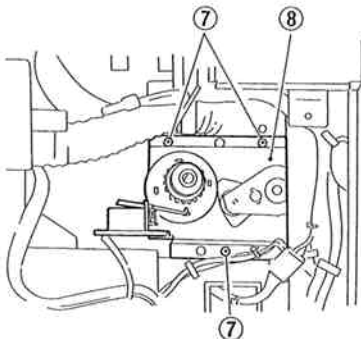


Figure 4-246

3. Adjusting the Drive Belt

Adjust the tension of the drive belt used to transmit drive to the gears inside the fixing drive assembly so that it is as shown.

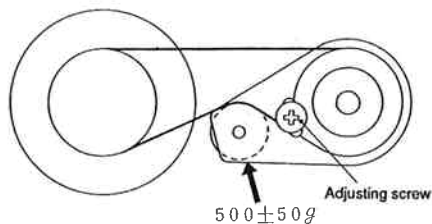


Figure 4-247

H. Two-Way Roller Drive Assembly

1. Construction

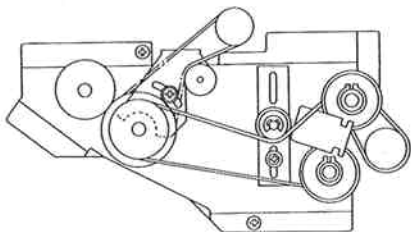


Figure 4-248

2. Detaching the Two-Way Roller Drive Assembly

- 1) Detach the rear cover.
- 2) Remove the three mounting screws ①, and disconnect the four connectors ②; then, detach the main motor controller PCB ③ together with the support plate.

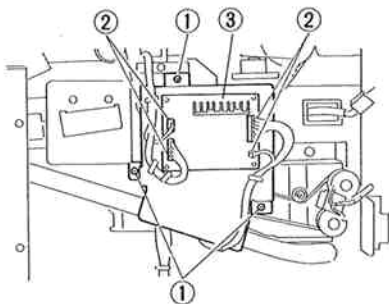


Figure 4-249

- 3) Loosen the three mounting screws ④ to decrease the tension of the two drive belts ⑤; one of the belts is on the main motor gear.

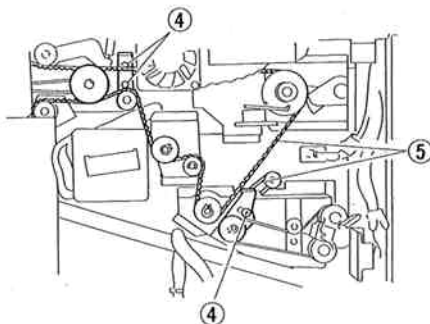


Figure 4-250

- 4) Remove the four mounting screws ⑥, and disconnect the two connectors ⑦; then, detach the two-way roller drive assembly ⑧. Detach the two-way roller drive assembly while detaching the drive belt used between the two-way roller drive assembly and the delivery assembly.

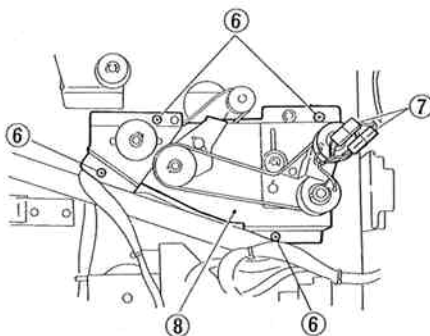


Figure 4-251

3. Adjusting the Tension of the Drive Belt

Adjust the tension of the drive belt used to transmit drive to each of the gears on the two-way roller drive assembly so that it is as shown.

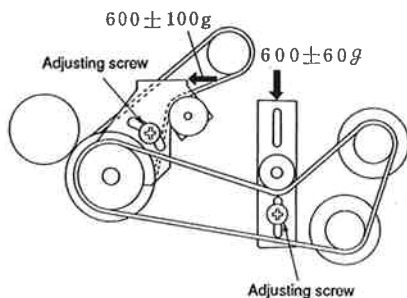


Figure 4-252

III. PICK-UP/FEED SYSTEM

A. Side Tray Assembly

1. Detaching the Side Tray Assembly

- 1) Detach the multifeed assembly; see p. 4-30.
- 2) Mark the position of the side tray using a scribe; then, remove the four mounting screws ①, disconnect the connector ②, and lift the side tray assembly to detach.

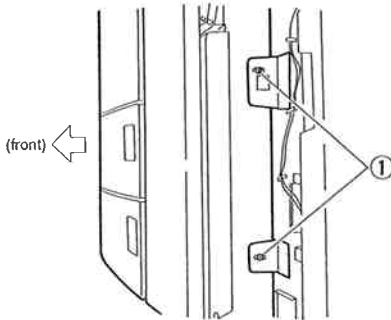


Figure 4-301-1

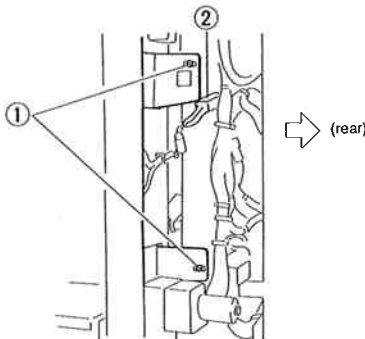


Figure 4-301-2

2. Detaching the Pick-Up Roller

- 1) Open the front tray cover, and remove the stop ring ① at the front and the stop ring ① at the rear; then, detach the pick-up roller ②.

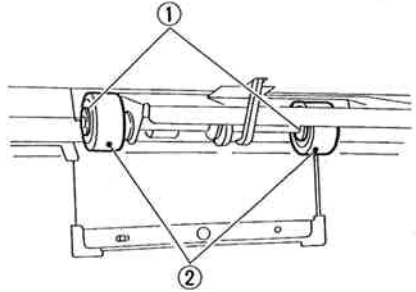


Figure 4-302

■ Mounting the Pick-Up Roller

The pick-up roller has its own rotation. Attach it so that the mark '8' is toward the rear as shown.

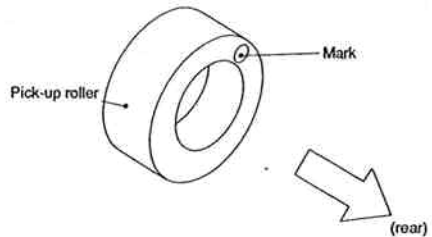


Figure 4-303

3. Detaching the Pick-Up/Feeder Roller

- 1) Detach the multifeed assembly from the copier; see p. 4-30.
- 2) Remove the mounting screw ①, and detach the roller stop plate ②.

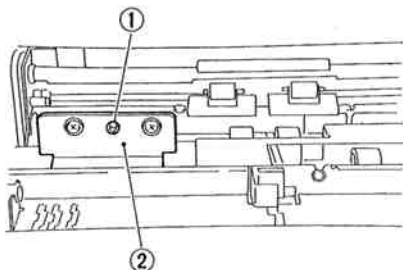


Figure 4-304

- 3) Detach the pick-up roller at the front.
- 4) Detach the stop ring ③ and the bushing ④; then, pull out the pick-up roller shaft ⑤ to the rear.

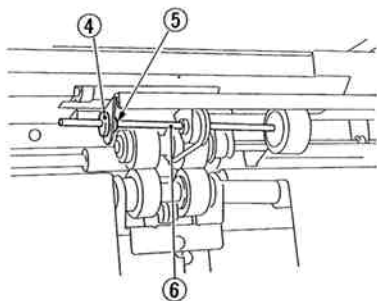


Figure 4-305

- 5) Remove the mounting screw ⑥, and detach the separation roller assembly cover ⑦.

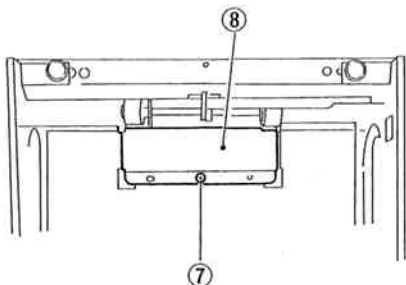


Figure 4-306

- 6) Detach the stop ring ⑧.
- 7) Push down the separation roller assembly ⑨, and detach the timing belt ⑩; then, detach the pick-up/feeder roller assembly ⑪.

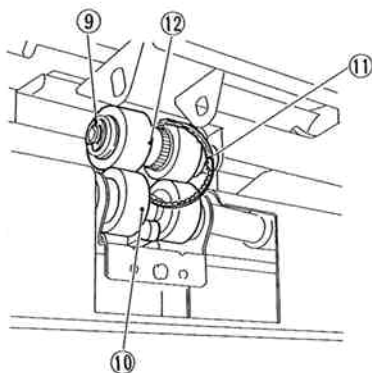


Figure 4-307

■ Attaching the Pick-Up/Feeder Roller

The pick-up/feeder roller has its own orientation; attach it so that the mark '8' is to the rear of the copier.

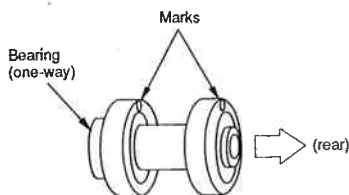


Figure 4-308

4. Detaching the Separation Roller

- 1) Open the side tray cover, and remove the mounting screw ①; then, detach the separation roller cover ②.

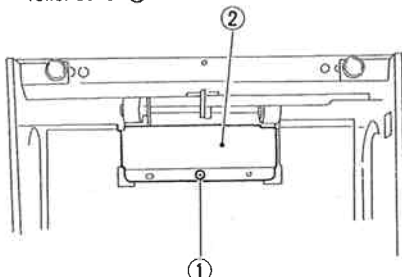


Figure 4-309

- 2) Remove the mounting screw ③, and push down the separation roller pressure roller ④ to detach the separation roller assembly ⑤ together with the support plate.

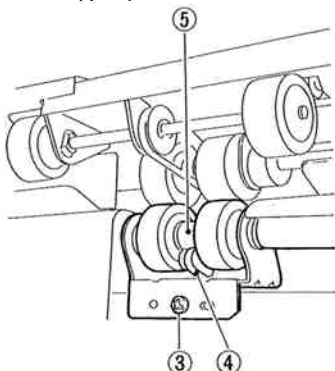


Figure 4-310

- 3) Detach the stop ring and the bearing at the front of the separation roller assembly; then, detach the separation roller from the roller shaft.

■ Attaching the Separation Roller

The separation roller has its own orientation.

- 1) Attach the separation roller so that the mark '2' is toward the coupling.

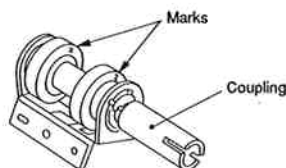


Figure 4-311

- 2) Attach the roller collar, if necessary, so that the rib on the roller collar is to the front.

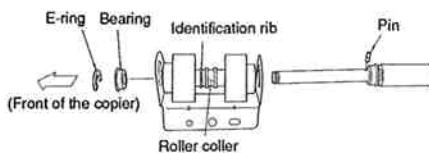


Figure 4-312

■ Adjusting the Pressure of the Pick-Up/Feeding Roller (side tray)

If pick-up failure or double feeding occurs frequently, change the position of the spring hooked on the retard stay.

- 1) if pick-up failure (no pick-up) occurs, increase the pressure.
- 2) if double feeding occurs, decrease the pressure.

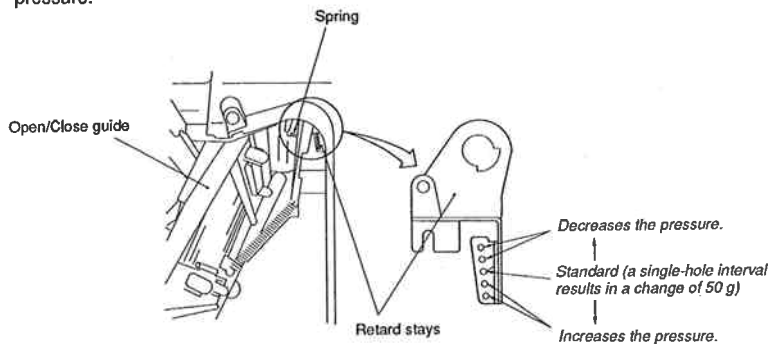


Figure 4-312a



5. Adjusting the Position of the Pick-Up Roller Release Solenoid

- 1) Place a sheet of copy paper on the side tray lifter, and switch the copier ON.
- 2) Disconnect the power plug when the lifter has stopped moving up, and open the side tray cover.
- 3) Detach the side tray cover (rear).
- 4) Push the plunger of the pick-up roller release solenoid, and attach the solenoid so that the pick-up roller is 4.0 ± 1 mm above the paper.

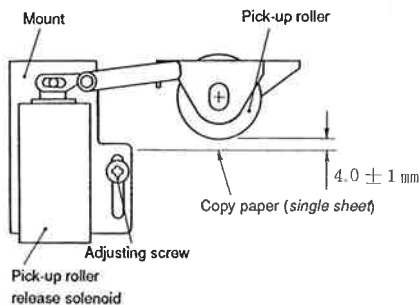


Figure 4-313

B. Multifeeder Assembly

1. Detaching the Multifeeder Assembly

- 1) Detach the front right cover, upper right cover, and side tray cover (rear).
- 2) Mark the position of the multifeeder assembly; remove the two mounting screws, disconnect the connector, and detach the multifeeder assembly.

Note:

- i. Insert plastic sheets (multifeeder) as shown in Figure 4-314 when attaching the multifeeder to the copier.

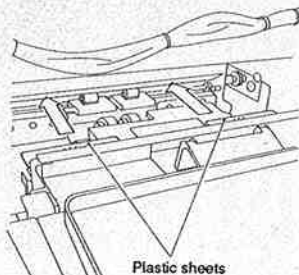


Figure 4-314

- ii. Take care not to bend or scar the plastic sheets found in the pick-up feeder assembly on the left of the multifeeder assembly; take extra care when attaching the multifeeder assembly to the copier.

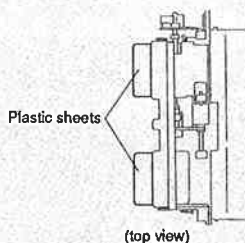


Figure 4-315

2. Detaching the Pick-Up Roller

- 1) Detach the stop rings ① at the front and the rear; then, detach the pick-up roller ②. Take care not to drop the parallel pin.

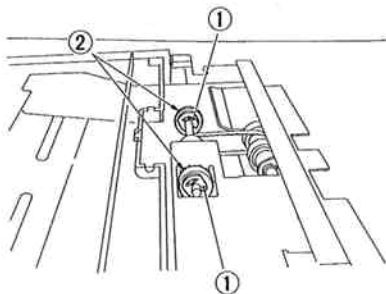


Figure 4-316

3. Detaching the Pick-Up/Feeder Roller

- 1) Detach the multifeed assembly from the copier.
- 2) Detach the pick-up roller ① at the front, and remove the E-ring ②; then, detach the belt ④ from the pick-up roller shaft ③. Take care not to drop the parallel pins from the pick-up roller and the gear ⑤.

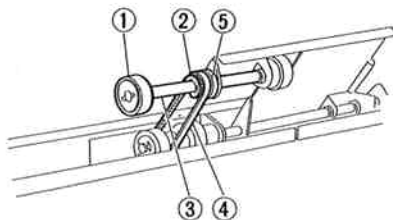


Figure 4-318

- 3) Remove the mounting screw ⑥ at the front left of the multifeed assembly, and detach the stop plate ⑦.

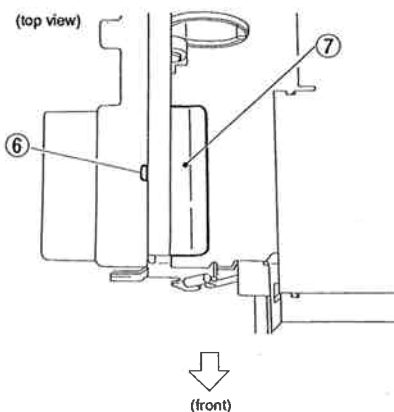


Figure 4-319

- 4) Remove the stop ring, and push down the separation roller assembly; then, detach the pick-up/feeder roller while detaching the belt.

4. Detaching the Separation Roller

- 1) Detach the multifeeder assembly from the copier.
- 2) Detach the spring ① from the pressure release lever ② at the front of the multifeeder assembly.

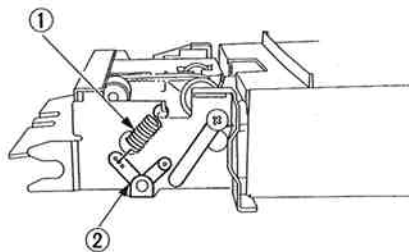


Figure 4-321

- 3) Remove the stopper ③ mounted on the front side of the roller pressure shaft.
- 4) Detach the separation roller pressure shaft ④ from the bushing ⑤, and detach the separation roller.

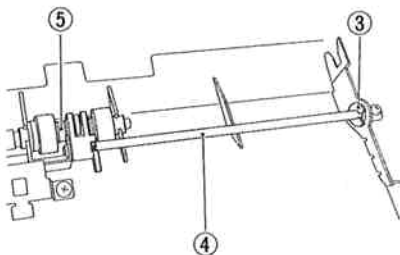


Figure 4-322

Note:

Attach the roller pressure lever so that the boss on the lever is above the feeder cover guide; see Figure 4-323.

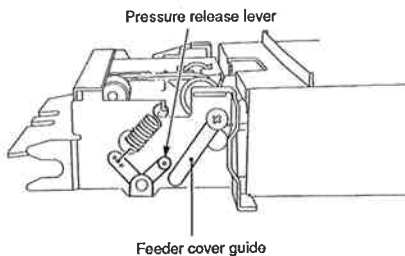


Figure 4-323

5. Attaching the Separation Roller

The separation roller has its own orientation; attach it so that the pin groove on the roller collar is to the coupling of the separation roller assembly.

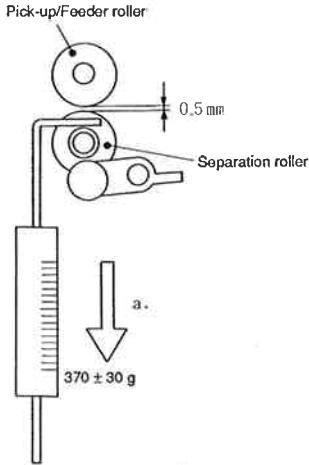


Figure 4-324

Adjusting the Pressure of the Separation Roller Assembly

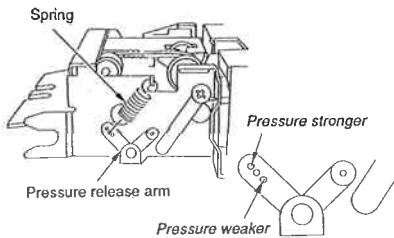


Figure 4-325

C. Front Tray Assembly

Note:

When detaching or relocating the front tray, be sure to hold it as shown in Figure 3-325; that is, hold it at the front and the rear.

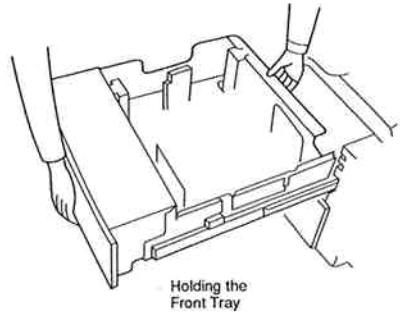
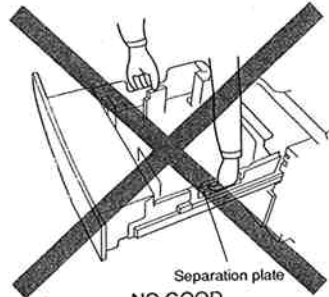


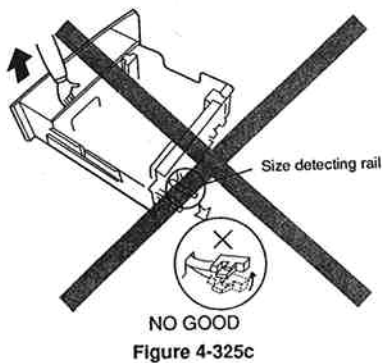
Figure 4-325a

1. If you hold the front tray by the separation plate, you can deform the separation plate.



NO GOOD
Figure 4-325b

2. If you placed the front tray on the floor or a desk and hold it at its front side, you can deform the size detecting rail at its rear.





1. Detaching the Front Tray Assembly

- 1) Detach the rear cover, and cause the front tray release solenoid to go ON; then, slide out the front tray until it butts against the front.
- 2) Remove the four mounting screws from the four corners of the inside of the tray; then, lift the front tray assembly to detach.

2. Detaching the Pick-Up Roller

- 1) Detach the front tray assembly.
- 2) Remove the stop rings from the front and the rear, and detach the pick-up roller; take care not to lose the pin.

■ Attaching the Pick-Up Roller

The pick-up roller has its own orientation; attach it so that the mark '8' is toward the front.

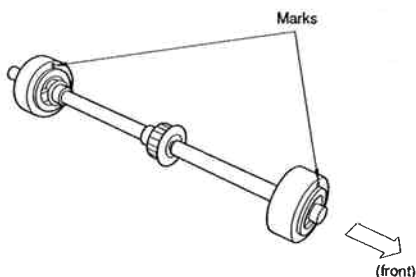


Figure 4-326

3. Detaching the Pick-Up/Feeder Roller

- 1) Detach the front tray assembly.
- 2) Remove the mounting screw ①, and detach the roller stop plate ②.

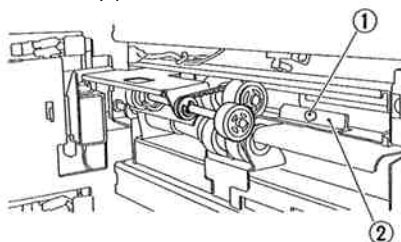


Figure 4-327

- 3) Remove the stop ring, and detach the pick-up/feeder roller.

■ Attaching the Pick-Up/Feeder Roller

The pick-up/feeder roller has its own orientation; attach the roller so that the mark '8' is toward the front.

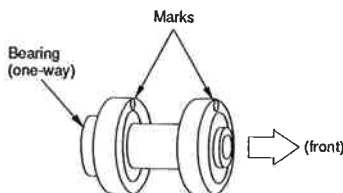


Figure 4-328

4. Detaching the Separation Roller

- 1) Detach the front tray assembly.
- 2) Remove the mounting screw ①, and detach the separation roller assembly ② support plate.

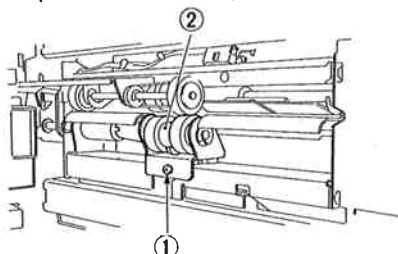


Figure 4-329

- 3) Detach the stop ring and the bearing at the front of the separation roller assembly, and pull out the separation roller shaft from the separation roller assembly.

■ Attaching the separation Roller

The separation roller has its own orientation; keep the following in mind when attaching it.

- 1) Attach the separation roller so that the mark '2' on the side of the rubber roller is toward the front of the copier.

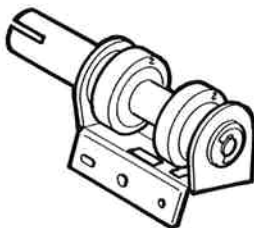


Figure 4-330

- 2) Attach the separation roller so that the identification rib on the roller collar is toward the rear of the copier.

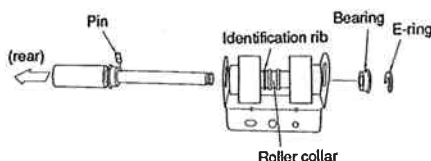


Figure 4-331

4a. Adjusting the Pressure of the Pick-Up/Feeding Roller

If pick-up failure or double feeding occurs frequently, change the position of the spring hooked on the C roller stay.

- 1) If pick-up failure (no pick-up) occurs, increase the pressure.
- 2) If double feeding occurs, decrease the pressure.

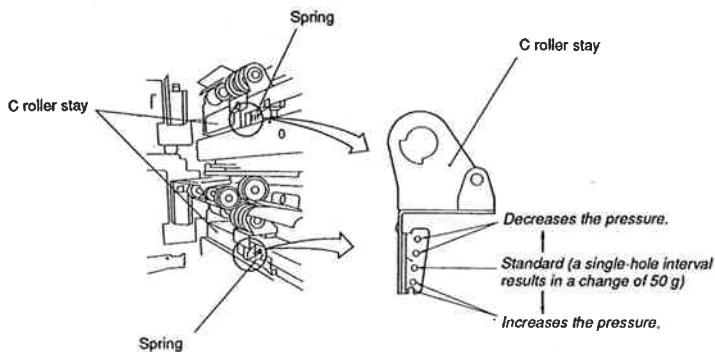


Figure 4-331a

4b. Adjusting the Stack Height on the Front Tray

If pick-up failure or double feeding jams occur frequently when using the front tray, check the position of the lifter (sensor); if necessary, make the following adjustments.

Checking the Height of the Paper Stack

- 1) Set paper in the front tray, and move up the lifter.
- 2) Place a ruler or the like on the paper stack, and check the position in relation to the separation plate; see Figure 4-331b.

Note:

- When checking the upper front tray, draw out the holding tray and lift the feeding assembly using a long screwdriver.
- When checking the lower front tray, detach the upper front tray.

Standards

The paper stack must be within $\frac{2}{3}$ (shaded) of A.

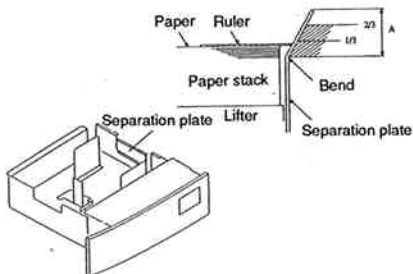


Figure 4-331b

- 3) If the position of the paper stack is not as indicated, loosen the two adjusting screws on the paper sensor plates, and reposition the sensors by moving the paper sensor support; see Figure 4-331c.

- If the paper stack is too low, lower the paper sensor support.
- If the paper stack is too high, raise the paper sensor support.

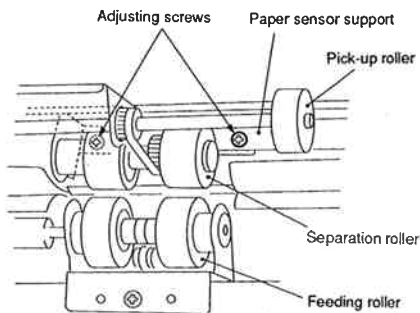


Figure 4-331c

5. Attaching the Front Tray Lifter Cable

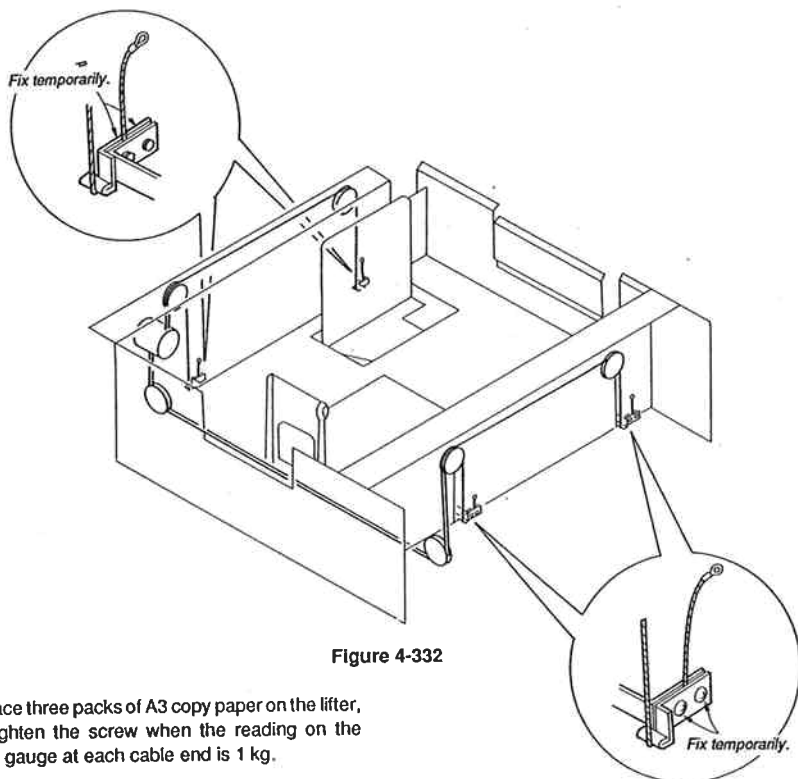


Figure 4-332

Place three packs of A3 copy paper on the lifter, and tighten the screw when the reading on the spring gauge at each cable end is 1 kg.

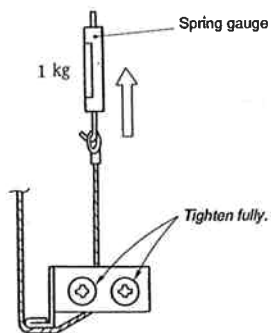


Figure 4-333

6. Adjusting the Position of the Front Tray Pick-Up Roller Release Solenoid

Adjust the position of the solenoid so that the distance between the center of the hole in the solenoid mount and the solenoid is 19 ± 0.3 mm; Detach the front tray pick-up roller release solenoid assembly to facilitate the work.

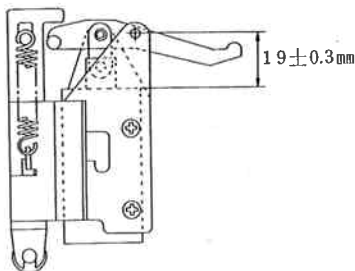


Figure 4-334

7. Adjusting the Position of the Front Tray Release Solenoid

Attach the solenoid so that the tip of the latch claw lowers 14 mm or more when the plunger of the solenoid is pushed.

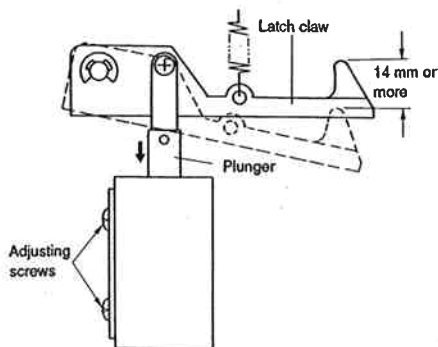


Figure 4-335

D. Vertical Path Roller Assembly

1. Detaching the Vertical Path Roller

- 1) Detach the rear cover from the copier.
- 2) Remove the two mounting screws, and open the DC controller PCB assembly.
- 3) Remove the four mounting screws, and lift the DC power supply PCB to detach.
- 4) Detach the spring ① from the tension pulley assembly, and decrease the tension of the drive belt ②.
- 5) Remove the four mounting screws ③, detach the bearing support plate ④, and detach the two bearings; detach the four spacers in advance to avoid misplacement when detaching the bearing from the front tray pick-up clutch assembly.

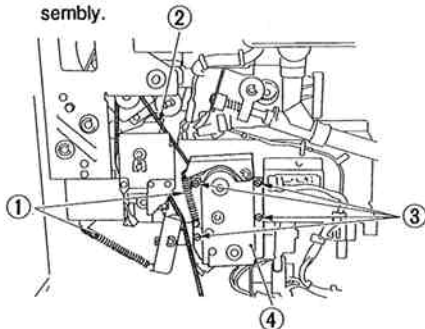


Figure 4-336

- 6) Remove the four mounting screws, and detach the spring mount ⑤.
- 7) Remove the mounting screw ⑥, and detach the roller shaft brake assembly ⑦.

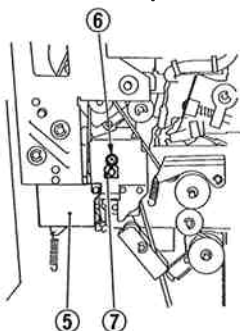


Figure 4-337

- 8) Remove the five mounting screws ⑧, and disconnect the two connectors ⑨; then, detach the gear drive assembly together with the support plate while detaching the drive belt from the pulley.
Then, detach the bearing from the vertical path roller shaft.

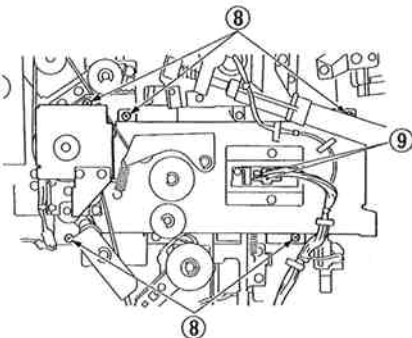


Figure 4-338

- 9) Remove the E-ring ⑩ and the gear ⑪ from the vertical path roller shaft.

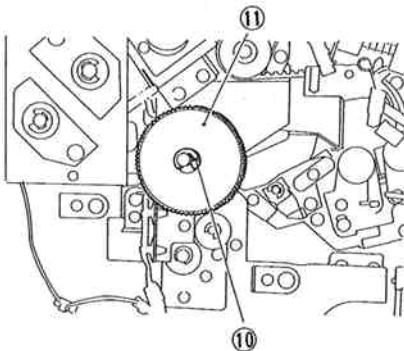


Figure 4-339

- 10) Remove the mounting screw ⑫, and detach the clutch stop ⑬.
- 11) Loosen the two hex screws, and disconnect the connector ⑭; then, detach the clutch ⑮.

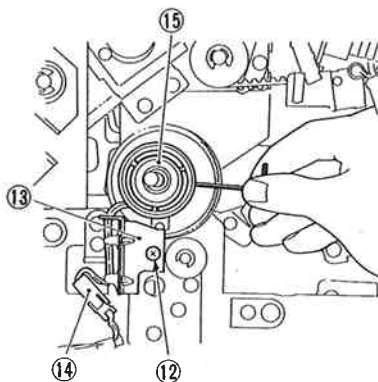


Figure 4-340

- 12) Loosen the two screws ⑰ on the belt pulley assembly ⑱ to decrease the tension of the drive belt ⑲.
- 13) Detach the drive gear ⑳ and the drive belt ㉑.

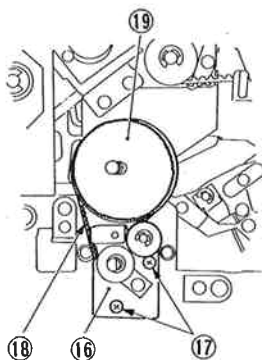


Figure 4-341

- 14) Remove the mounting screw ㉒, and remove the two float pins ㉓.
- 15) Remove the E-ring ㉔, and detach the bearing ㉕.

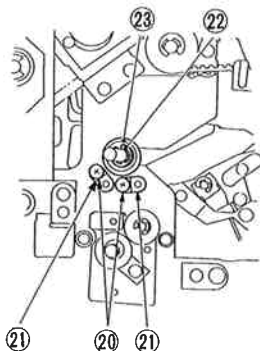


Figure 4-342

- 16) Open the front door, and detach the pick-up assembly cover (p. 4-2), drum unit (p. 4-56), and holding tray (p. 4-48).
- 17) Remove the mounting screw ㉖ and the two float pins ㉗.
- 18) Remove the E-ring ㉘, and detach the bearing ㉙.

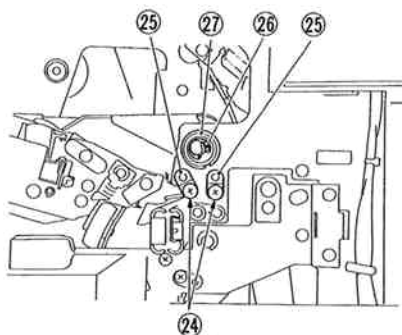


Figure 4-343

- 19) Lift the feeder assembly, and pull out the duplexing pick-up guide 28.

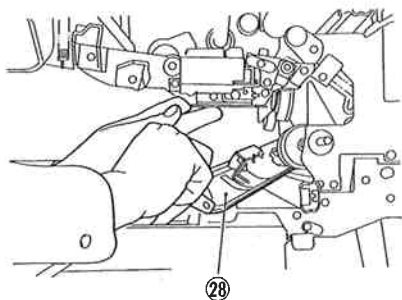


Figure 4-344

- 20) Remove the E-ring 29, and detach the bushing 30; then, detach the U guide plate 31 from the pick-up roller shaft.

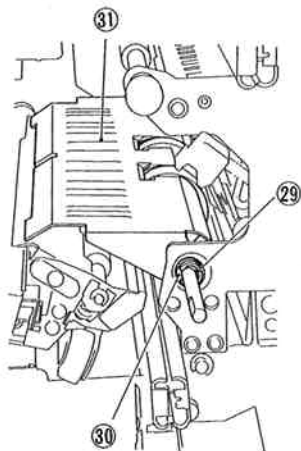


Figure 4-345

- 21) Slide out the vertical path roller together with the shaft to the front.

E. Feeder Assembly

1. Construction

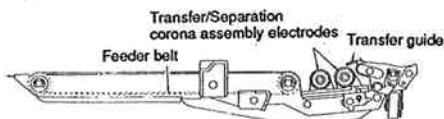


Figure 4-346

2. Detaching the Feeder Assembly

- 1) Detach the rear cover.
- 2) Remove the two mounting screws, and open the DC controller PCB assembly.
- 3) Remove the two mounting screws, disconnect the connector, and detach the feeder fan; see p. 4-7.
- 4) Remove the three mounting screws, disconnect the four connectors, and detach the main motor driver PCB together with the support plate.
- 5) Loosen the two mounting screws on the tension pulley assembly ① to decrease the tension of the drive belt.
- 6) Remove the four mounting screws ②, and detach the feeder assembly drive gear assembly ③.
- 7) Remove the E-ring ④ and detach the gear ⑤ from the feeder assembly support plate; take care not to drop the pin from the gear.
- 8) Remove the E-ring ⑥ from the feeder assembly support shaft, and detach the bearing ⑦.

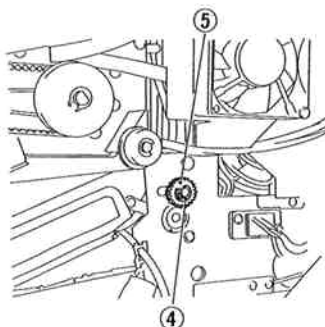


Figure 4-348

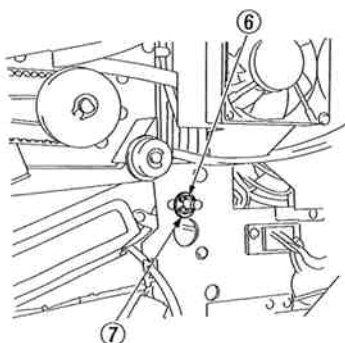


Figure 4-349

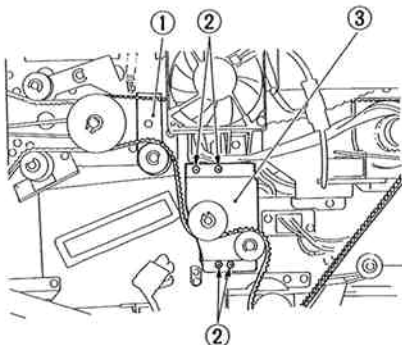


Figure 4-347

- 9) Disconnect the connector ⑧.

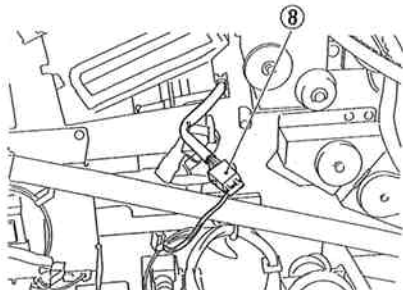


Figure 4-350

- 10) Remove the two fastons ⑨ from the high-voltage transformer assembly, and detach the harness from the harness guide.

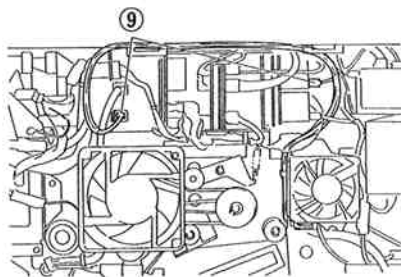


Figure 4-351

- 11) Open the front door.
 12) Detach the drum unit and the holding tray assembly; see p. 4-56, p. 4-48.
 13) Remove the two mounting screws, and detach the fixing lower cover.
 14) Remove the four mounting screws ⑩, and detach the support plate ⑪; see Figure 4-352.
 15) Remove the spring ⑫ to which the feeder assembly is suspended.
 16) Remove the E-ring ⑬ and detach the bearing ⑭ from the feeder assembly support shaft, and pull out the feeder assembly to the front.

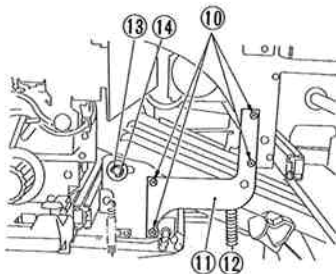


Figure 4-352

3. Detaching the Feeder Belt

- 1) Remove the five mounting screws ①, and detach the duct ②.
- 2) Remove the three mounting screws ③, and detach the holding tray feeder rail ④.

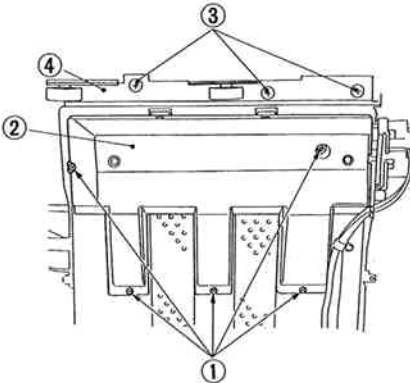


Figure 4-353

- 3) Remove the E-rings and the bearings ⑤ from both ends of the belt roller (left), and detach the belt roller shaft (left) ⑥ from the feeder assembly.

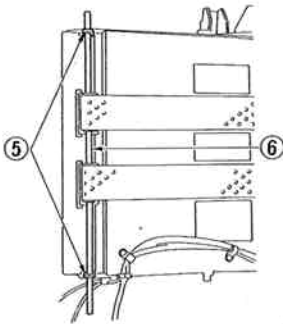


Figure 4-354

- 4) Remove the mounting screw ⑦ at the rear of the feeder assembly, and detach the leaf spring ⑧.
- 5) Remove the two stepped screws ⑨, and detach the transfer/separation corona assembly electrode ⑩.

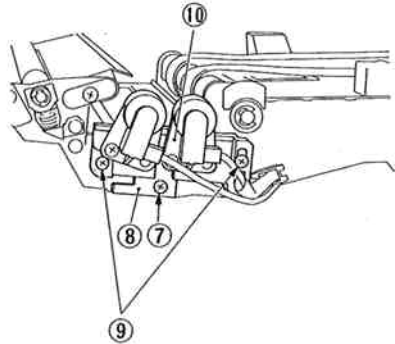


Figure 4-355

- 6) Remove the screws ⑪ and the float pins ⑫ at the front and the rear, and detach the feeder stay ⑬.

Note:

Work while paying attention to the varistor on the feeder stay.

- 7) Remove the E-rings ⑭ at the rear and the front, and detach the bearing block ⑮ and the spring ⑯.

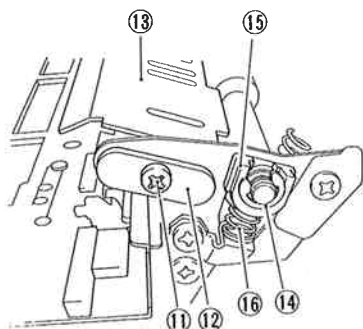


Figure 4-356-1

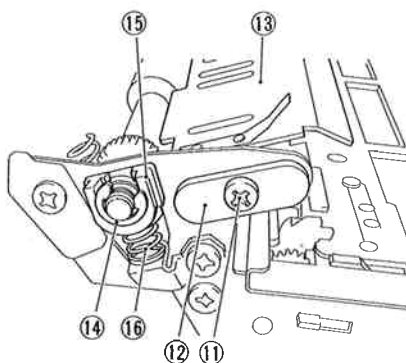


Figure 4-356-2

- 8) Remove the stepped screw ⑰ at the front, detach the guide plate ⑱ and the bush ⑲, and detach the wire cleaner drive shaft.

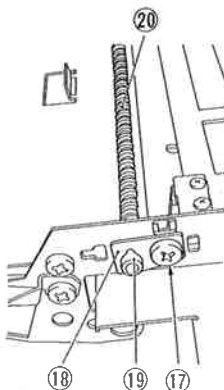


Figure 4-357

- 9) Detach the wire cleaner motor together with the support plate.
10) Remove the mounting screws ⑳ at the front and the rear, and detach the transfer/separation corona assembly stay.

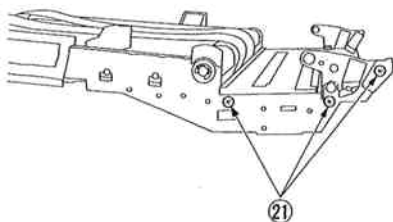


Figure 4-358-1

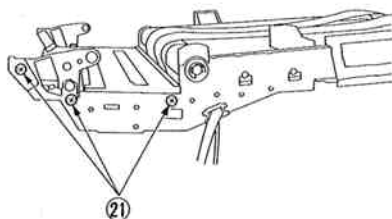


Figure 4-358-2

- 11) Remove the two mounting screws ②, and detach the guide plate ③; then, detach the feeder belt from the feeder assembly.

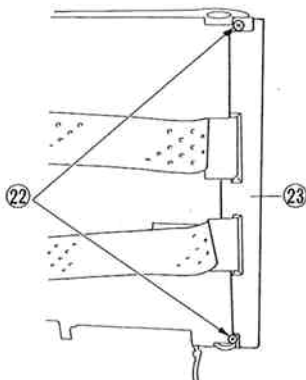


Figure 4-359

F. Duplexing Unit

1. Detaching the Duplexing Unit Feeder Assembly from the Copier

- 1) Detach the copier's rear cover.
- 2) Detach the feeder fan; see p. 4-7.
- 3) Detach the two-way roller drive assembly; see p. 4-25.
- 4) Remove the E-ring ① of the front feeder shaft, and detach the gear ②.

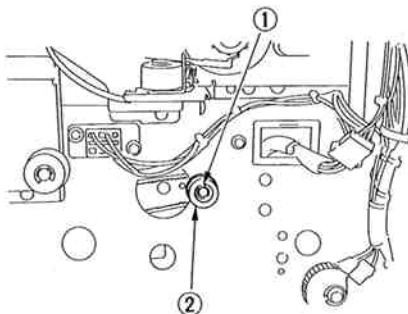


Figure 4-360

- 5) Remove the E-ring.
- 6) Remove the E-ring ③, and detach the bearing ④.

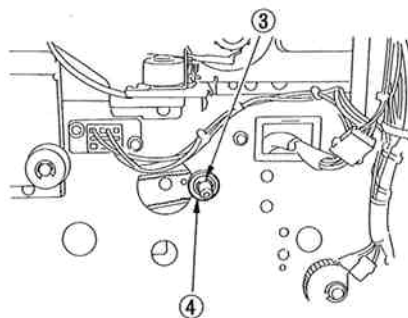


Figure 4-361

- 7) Remove the two mounting screws ⑤, and detach the hinge support plate (rear; ⑥); then, detach the hinge that supports the duplexing unit feeder assembly (rear).
- 8) Disconnect the two connectors ⑦.

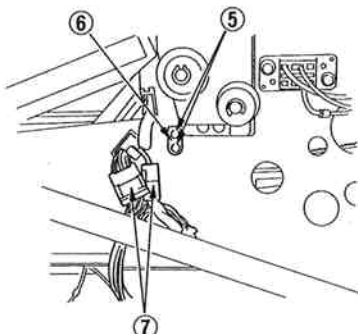


Figure 4-362

- 9) Detach the fixing assembly and the holding tray from the copier; see pp. 4-71 and -48.
- 10) Remove the mounting screw, and detach the left door band.
- 11) Remove the two mounting screw, and detach the fixing assembly lower cover; then, remove the two screws, and detach the delivery assembly cover.
- 12) Remove the two mounting screws ⑩, and detach the hinge support plate (front) ⑨; then, detach the hinge (front) that supports the duplexing unit feeder assembly (front).
- 13) Remove the E-ring ⑪, and detach the bearing ⑩.
- 14) Remove the two springs ⑫, and pull out the duplexing unit feeder assembly.

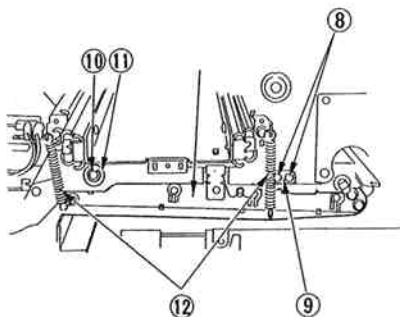


Figure 4-363

2. Adjusting the Position of the Duplexing Unit Feeder Assembly Paper Deflector Drive Solenoid

Attach the solenoid so that each of the solenoids (S, M, and L) is as shown in Figure 4-364 when its respective plunger is pushed.

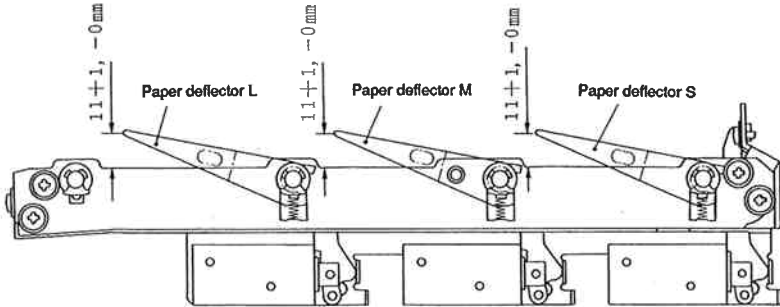


Figure 4-364

G. Holding Tray Unit

1. Detaching the Holding Tray Unit

- 1) Open the front door, and slide the holding tray unit until it stops.
- 2) Remove the two mounting screws, and detach the holding tray front cover.

Note:

Hold the grip when detaching the cover.

- 3) Remove the two screws ① from the left side of the holding tray and the two screws ② from the rail assembly on the right; then, lift the holding tray assembly to detach.

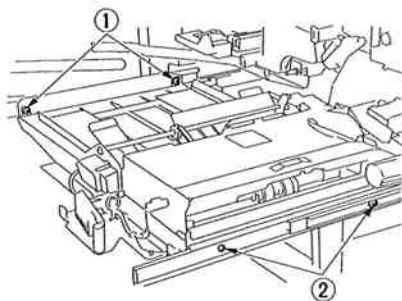


Figure 4-365

2. Detaching the Separation Roller

- 1) Open the front door, and slide out the holding tray assembly.
- 2) Remove the two mounting screws, and detach the upper cover from the holding tray assembly.
- 3) Remove the stop ring ①.
- 4) Push up the separation roller pressure roller, and detach the separation roller assembly ②.

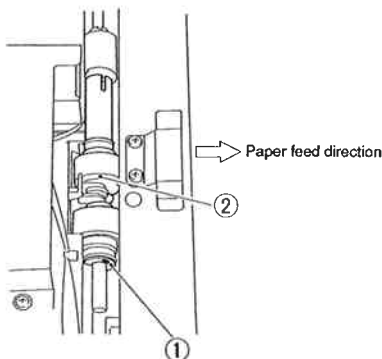


Figure 4-366

■ Attaching the Separation Roller

The separation roller has its own orientation.

- 1) Attach it so that the mark '2' on the roller is to the coupling.

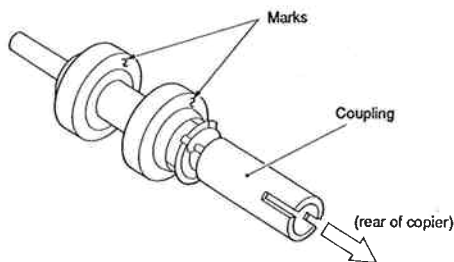


Figure 4-367

- 2) Check that the rib on the roller collar is toward the front.

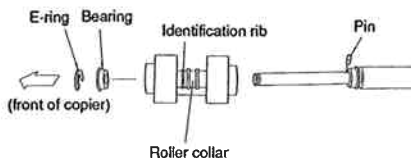


Figure 4-368

3. Detaching the Feeder Roller

- 1) Detach the holding tray assembly from the copier.
- 2) Remove the mounting screw ① from behind the holding tray assembly, and detach the sensor assembly.
- 3) Remove the E-ring ②, and detach the bushing ③.

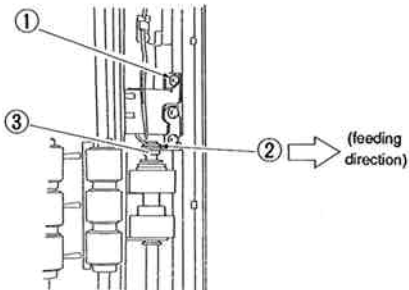


Figure 4-369

- 4) Remove the four mounting screws ④ from the front and the rear, and detach the stay ⑤.

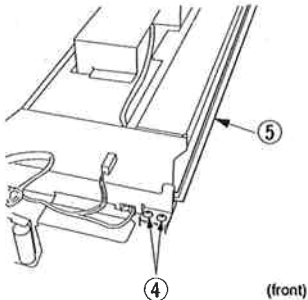


Figure 4-370a

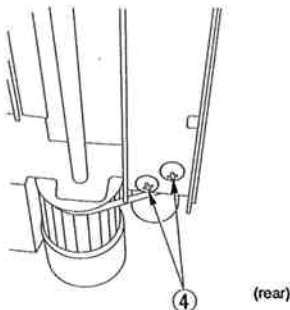


Figure 4-370b

- 5) Remove the stop ring, and detach the feeder roller.

Note:

The feeder roller guide plate is positioned at the factory with precision; do not loosen the two mounting screws shown in Figure 4-371.

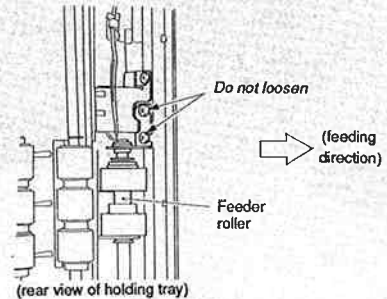


Figure 4-371

■ Attaching the Feeder Roller

The feeder roller has its own orientation; attach it so that the mark '8' is toward the rear.

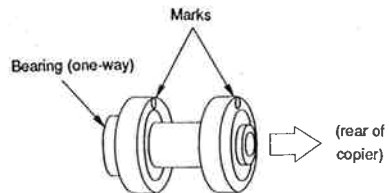


Figure 4-372

4. Adjusting the Position of the Sub Feeder Roller Solenoid

Adjust the position of the solenoid so that the sub feeder roller is in contact with the paper feeding surface when the plunger of the solenoid is pushed.

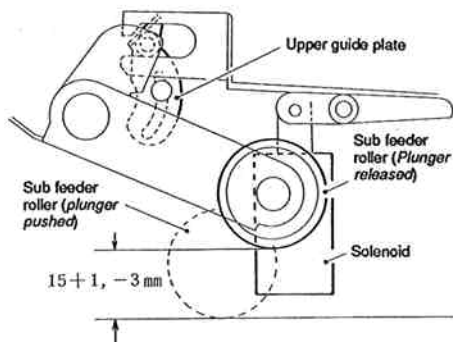


Figure 4-373

5. Adjusting the Position of the Re-Feed Pressure Release Solenoid

Adjust the position of the solenoid so that the distance between the pressure release lever and the bottom surface of the solenoid is $8.0 \pm 0.1 \text{ mm}$ when the plunger of the solenoid is pushed.

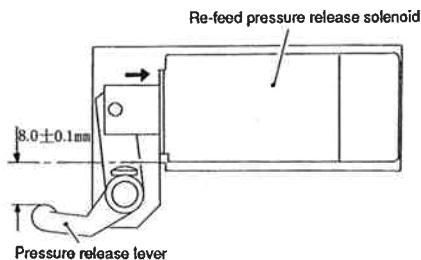


Figure 4-374

H. Delivery Assembly

1. Construction

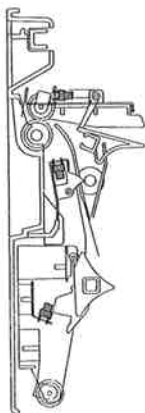


Figure 4-375

2. Detaching the Delivery Assembly

- 1) Remove the rear cover.
- 2) Remove the mounting screw (stepped), and detach the cable that holds the delivery assembly.
- 3) Disconnect the connector at the rear.
- 4) Remove the mounting screw ①, and detach the hinge ② at the rear of the delivery assembly; then, detach the delivery assembly.

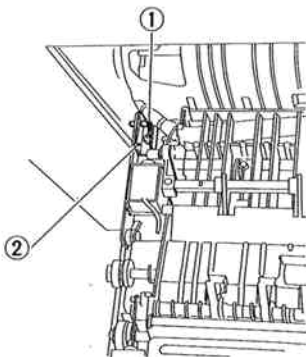


Figure 4-376

3. Detaching the Duplexing Vertical Path Roller

- 1) Open the delivery assembly, and remove the mounting screw (stepped); then, detach the cable that holds the delivery assembly.
- 2) Remove the four mounting screws, and detach the reversal guide plate ①.

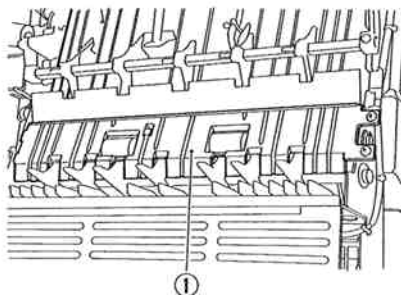


Figure 4-377

- 3) Remove the E-ring ③ and detach the bushing ④ at the front of the roller shaft ②.

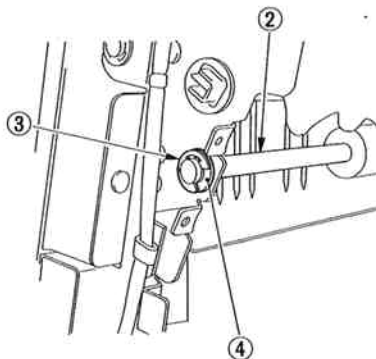


Figure 4-378

- 4) Detach the E-ring ⑤, gear ⑥, pulley ⑦, E-ring ⑧, E-ring ⑨, spring ⑩, and bushing ⑪.

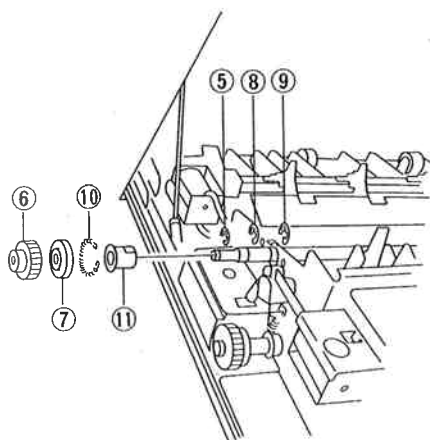


Figure 4-379

- 5) Push the vertical path roller roller, and detach the vertical path roller together with the shaft.

Note:

Tighten the two screws at the rear first and then the screw at the front when attaching the reversal guide plate.

4. Adjusting the Position of the No. 1 Paper Deflector Drive Solenoid

Adjust the position of the solenoid so that the No. 1 paper deflector is as shown in Figure 4-380 when the plunger of the solenoid is pushed.

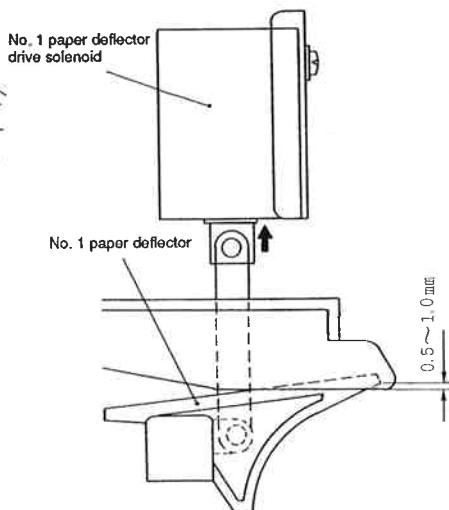


Figure 4-380



IV. EXPOSURE SYSTEM

A. Scanning Lamp Assembly

1. Detaching the Scanning Lamp

- 1) Detach the copyboard glass retainer, and detach the copyboard glass.
- 2) Move the No. 1 mirror mount to the center.
- 3) Remove the two mounting screws ①, and detach the reflector ②.

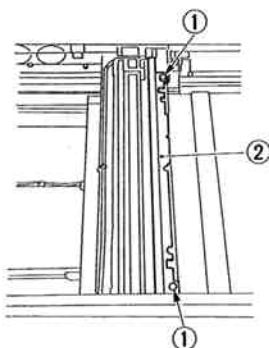


Figure 4-401

- 4) Remove the screw ③, which holds the electrode block at the rear; then, detach the scanning lamp.

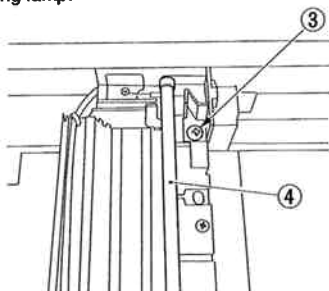


Figure 4-402

Note:

- i. Make sure that the scanner lamp is adequately cool before starting the work.
- ii. Do not leave fingerprints on the surface of the scanning lamp.
- iii. Dry wipe the surface of the scanning lamp if it is soiled.
- iv. Do not leave fingerprints on the reflector.
- v. Do not deform the reflector.

B. Standard White Plate

1. Detaching the Standard White Plate

- 1) Detach the copyboard glass retainer, and detach the copyboard glass.
- 2) Move the No. 1 mirror mount until it butts against the side (right).
- 3) Remove the two mounting screws ①, and detach the white plate cover ②.

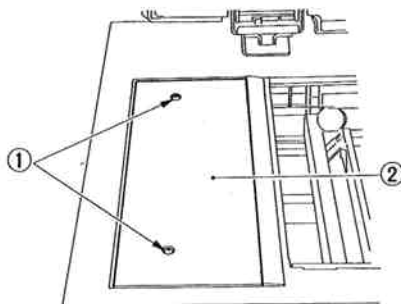


Figure 4-403

- 4) Remove the mounting screw ③, and push the left side of the standard white plate ④ over the upper cover; then, detach it slowly.

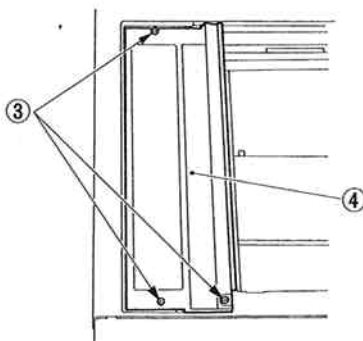


Figure 4-404

Note:

Do not force the plate off.

C. Pre-Exposure Lamp Assembly

1. Detaching the Front Exposure Lamp Assembly

- 1) Slide out the drum unit; see p. 4-56.
- 2) Detach the spring at the rear of the pre-exposure lamp.
- 3) Remove the mounting screw ① and disconnect the connector ② at the front of the pre-exposure lamp; then, detach the pre-exposure lamp. Take care not to damage the photosensitive drum.

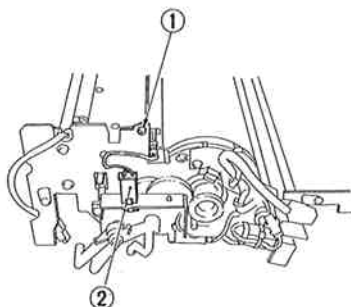


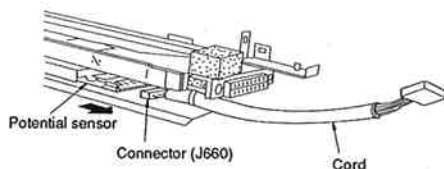
Figure 4-405

D. Blank Exposure Lamp Assembly

- 1) Open the front door, and slide out the holding tray; then, detach the process cover.
- 2) Detach the drum unit from the copier; see p. 4-56.
- 3) Pull out the blank exposure lamp assembly carefully.

Note:

When you attach the blank exposure assembly after you have detached it or hooked it on the rail mount, make sure that the connector (J660) has not come off the potential sensor. Further, do not pull on the cord while the blank exposure assembly is set to its position; doing so could disconnect the connector (J660); see Figure 4-405a.



Blank Exposure Assembly

Figure 4-405a

V. CORONA SYSTEM

A. Photosensitive Drum

1. Detaching the Drum Unit

- 1) Open the front door, and slide out the holding tray; then, detach the process cover.
- 2) Disconnect the connector ① from the blank exposure lamp assembly and the connector ② from the toner level PCB; then, remove the faston ③ from the orientation mount.

Note:

Hold the positioning plate when pulling out the faston ③ of the orientation mount; otherwise, the positioning plate may come off the cylinder shaft.

- 3) Remove the mounting screw ④, and detach the developing assembly duct ⑤.

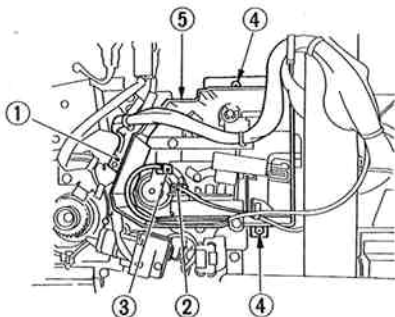


Figure 4-501

- 4) Turn the developing assembly release lever to release the developing assembly from the photosensitive drum.

- 5) Remove the mounting screw ⑥, and hook the blank exposure lamp assembly ⑦ on the rail mount ⑧.

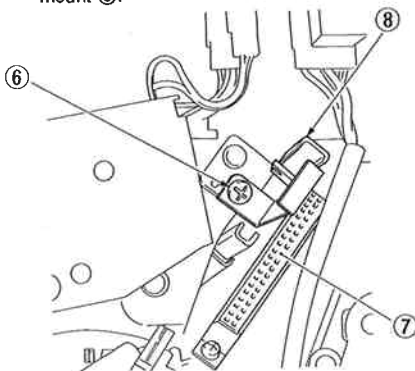


Figure 4-502

- 6) Detach the primary corona assembly and the pre-transfer corona assembly; see p. 4-59.
- 7) Remove the mounting screw, and detach the drum positioning block ⑩.
- 8) Remove the two mounting screws ⑪, and disconnect the two connectors ⑫.

Note:

Push the gear ⑩ when turning the mounting screw on the drum positioning block.

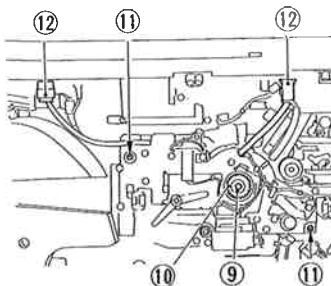


Figure 4-503

- 9) Slide out the drum unit to the front carefully until it stops.
- 10) Remove the two mounting screws ⑬, and detach the two drum unit guide plate ⑭.

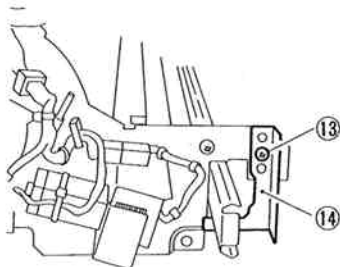


Figure 4-504

- 11) Lift the drum unit to detach.

2. Detaching the Photosensitive Drum

- 1) Slide out the drum unit; see p. 4-56.
- 2) Rotate the pre-exposure lamp assembly ① in the direction of the arrow to release it from the photosensitive drum.

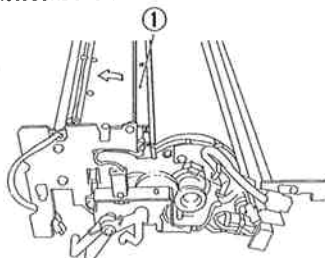


Figure 4-505

- 3) Remove the two mounting screws ②, and detach the drum stop ③.

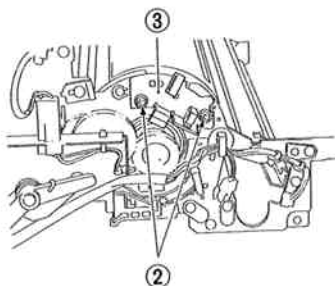


Figure 4-506

- 4) Slide the photosensitive drum together with the bearing ④ and the gear ⑤ to the rear, and lift it to detach.

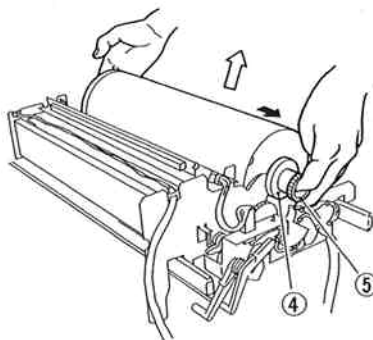


Figure 4-507

- 5) Detach the gear and the bearing (front, rear) from the drum shaft.

3. Replacing the Drum Heater

- 1) Detach the photosensitive drum.
- 2) Remove the two mounting screws ①, and detach the flange ② at the front.

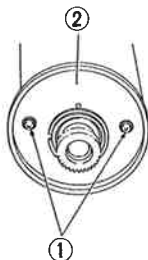


Figure 4-508

- 3) Pull the flange at the rear, and detach the drum heater assembly from the photosensitive drum; then, disconnect the connector, and detach the drum heater.

4. Attaching the Photosensitive Drum

Attach the photosensitive drum going through the steps but in reverse order; check the following:

- a. Make sure that the surface of the drum is free of dirt and scratches.
- b. The drum is attached so that the label inside the drum is to the front; misplacement will result in uneven density between the left and the right sides of the copies.

The drum sensitivity must be entered again when the photosensitive drum has been replaced. Go through the following steps:

- 1) Attach the photosensitive drum to the drum unit.
- 2) Attach the drum stop and the drum positioning block; then, set the drum unit in the copier.
- 3) Attach the blank exposure lamp assembly.
- 4) Attach the pre-transfer corona assembly and the primary corona assembly.
- 5) Attach the holding tray.
- 6) Switch the machine ON.
- 7) Select 'DRUM-SEL' in the service mode (⌘|3|⌘).
- 8) Enter the drum sensitivity recorded on the drum sensitivity sheet found in the drum box.
- 9) Press the **OK** key.
- 10) Press the RESET key twice.
- 11) Attach the drum sensitivity sheet behind the front left door.
- 12) Attach all covers.

B. Potential Sensor Assembly

1. Detaching the Potential Sensor Assembly

- 1) Detach the blank exposure lamp assembly; p. 4-55.
- 2) Remove the two mounting screws ①, and detach the potential sensor assembly from the blank exposure lamp assembly together with the support plate.

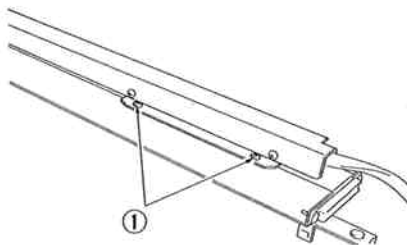


Figure 4-509

Note:

The position of the potential sensor need no be adjusted. If the potential sensor must be replaced, the potential measurement PCB must be replaced at the same time; make sure that the Nos. of the sensor and the PCB are identical.

C. Primary Corona Assembly

1. Detaching the Primary Corona Assembly

- 1) Open the front door.
- 2) Slide out the holding tray, and detach the process cover.
- 3) Loosen the mounting screw ①, and slide the corona assembly stop ② to the left.
- 4) Disconnect the connector ③, and pull out the primary corona assembly ④ carefully.

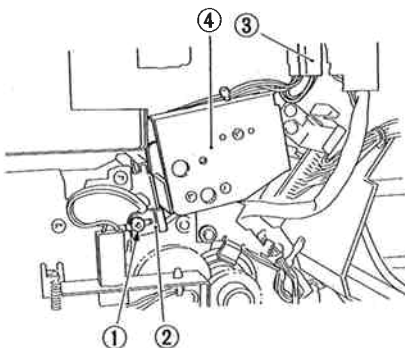


Figure 4-510

D. Pre-Transfer Corona Assembly

1. Detaching the Pre-Transfer Corona Assembly

- 1) Open the front door.
- 2) Slide out the holding tray, and remove the process cover.
- 3) Remove the mounting screw ①, and disconnect the connector ②; then, pull out the pre-transfer corona assembly ③.

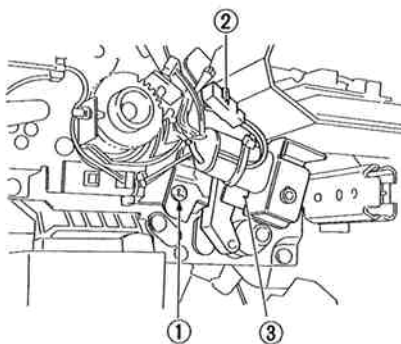


Figure 4-511

E. Transfer/Separation Corona Assembly

1. Detaching the Transfer/Separation Corona Assembly

- 1) Open the front door.
- 2) Slide out the holding tray, and detach the process cover; then, set the holding tray to the copier once again.
- 3) Insert a long screwdriver into the hole in the feeder assembly cover, and slide out the holding tray.
- 4) Remove the two mounting screws ①, and detach the corona assembly stop plate ②; then, slide out the transfer/separation corona assembly.

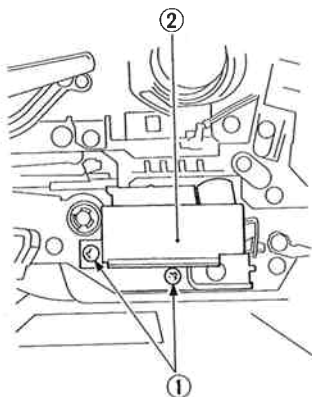


Figure 4-512

F. Corona Wire

1. Outline

The photosensitive drum is surrounded by the primary, pre-transfer, and transfer/separation corona assemblies.

A grid wire is attached with the primary corona assembly; 16 runs; and the grid is made of corona wire, 0.1 mm in diameter.

The corona wire used for other corona assemblies is 0.06 mm in diameter and is gold plated. Although the grid wire is not gold-plated, a gold-plated wire may be used in the field.

2. Detaching the Wire Cleaner of the Primary Corona Assembly

- 1) Hold the wire cleaner with fingers, and disengage it using a flat-blade screwdriver.

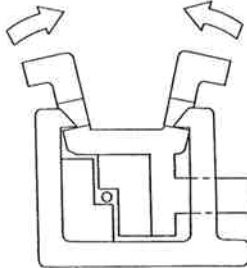


Figure 4-513 Cross Section

3. Routing the Corona Wire

As a rule, all corona wires except the grid wire are routed in the same way; the following steps use the primary corona assembly for discussion.

- 1) Detach the shield plate (right, left) of the corona assembly. Detach the left and right shield plates separately to prevent deformation (warp) of the primary corona assembly; in other words, do not loosen any of the screws ① on the shield plate at the same time.

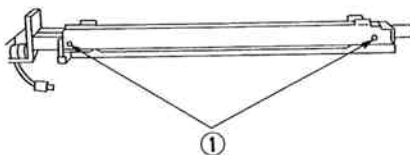


Figure 4-514

- 2) Detach the wire cleaner.

Note:

If for other corona assemblies, detach the two covers as well.

- 3) Free a length of about 5 cm from a 0.06-dia corona wire reel, and form a loop at the end about 2 mm in diameter.

Note:

When forming a loop, wind the corona wire around a hex key once; then, turn the hex key three to four times, and twist the wire.

- 4) Cut the end (excess) of the twisted corona wire to 1 mm or less using a nipper.
5) Hook the loop on the stud.

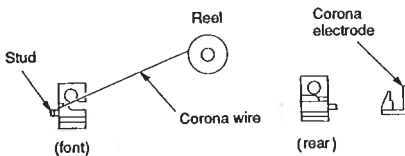


Figure 4-515

- 6) Hook the corona wire on the corona wire positioner at the rear, and hook the corona wire tension spring on the corona wire; then, twist it.

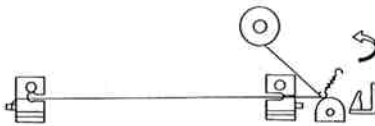


Figure 4-516

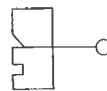
- 7) Cut the excess corona wire using a nipper.
8) Pick the end of the corona wire tension spring using tweezers, and hook it on the corona electrode.



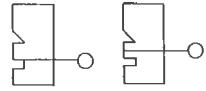
Figure 4-517

Note:

- Make sure that the corona wire is free of bends or twists, and its gold-plating has not peeled.
- Make sure that the corona wire is not slack.
- Make sure that the corona wire is lead through the V-notch of the height-adjusting roll.



(correct)

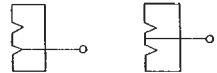


(wrong)

Grid die



(correct)



(wrong)

Figure 4-518 primary Corona Wire

- 9) Attach the cushion at the front of the corona assembly; this does NOT apply to the primary corona assembly.
10) Attach the shield plate (left, right).

Note:

If for other corona assemblies, attach the two covers.

- 11) Attach the wire cleaner; at the time, make sure that the orientation is correct.
12) Wipe the corona wire using lint-free paper moistened with alcohol.

4. Routing the Primary Corona Assembly Grid Wire

- 1) Loosen the two screws at the front that hold the shield plates (left, right) in place).
- 2) Loosen the four screws that hold the motor unit at the front in place.

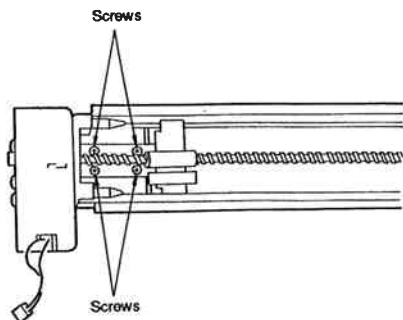


Figure 4-519

- 3) Loosen the screw, and move the mount in the direction of the arrow; then, tighten the screw temporarily.

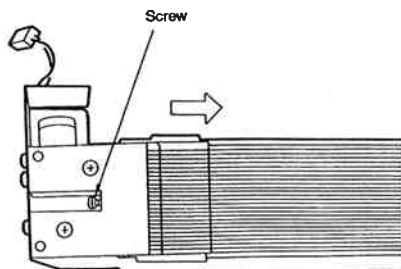


Figure 4-520

- 4) Free a length of about 5 cm from a 0.01-dia corona wire reel, and form a loop at the end about 2 mm in diameter.

Note:

When forming a loop, wind the corona wire around a hex key once; then, turn the hex key three to four times, and twist the wire.

- 5) Cut the end (excess) of the twisted corona wire.
- 6) Hook the loop on stud A shown in Figure 4-00.
- 7) After the wire has been routed for 41 runs, wind the its end once around stud B; then, keep the end between the washer and the motor unit, wind it clockwise once around the stop screw, and fix it in place on the screw.

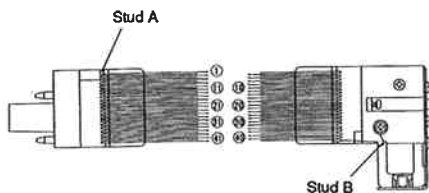


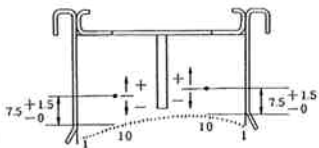
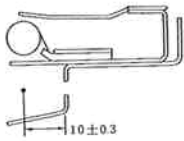
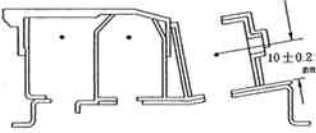
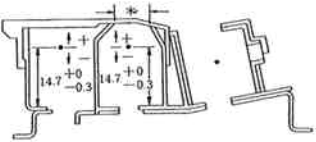
Figure 4-521

- 8) Cut the excess corona wire using a nipper.
- 9) Tighten the screw loosened in step 3); tighten it until the tension of the grid wire is even. Avoid deforming (warping) the corona assembly; tighten the screw (front) on both left/right shield plates as early as possible.
- 10) Tighten the screw loosened in step 2).
- 11) Wipe the grid wire using lint-free paper moistened with alcohol.

Note:

- i. Make sure that the grid wire is free of bends or twists.
- ii. Make sure that the grid wire is routed at even intervals; i.e., it is in the groove of the block.

5. Adjusting the Height of the Corona Wire

Corona assembly	Height	Tolerance
Primary		$\pm 1 \text{ mm}$
Pre-transfer		Height adjustment impossible.
Transfer		$\pm 2 \text{ mm}$
Separation		Height adjustment impossible.

Note:

The height (position) of the primary and the transfer corona wire can be adjusted by turning the screw behind the corona assembly; a full turn moves the corona wire by about 0.7 mm.

*: The size of the opening in the 1st separation corona assembly is adjusted with high precision; make sure that the opening will not become wider or narrower by bending the shielding plate.

VI. DEVELOPING SYSTEM

A. Developing Assembly

1. Construction

Note:

The machine's developing assembly is not equipped with a developing cylinder. Take care not to damage the developing cylinder after detaching the developing cylinder.

2. Detaching the Developing Assembly

- 1) Open the front door, and detach the process cover.
- 2) Disconnect the connector ① from the toner level sensor PCB of the developing assembly, and disconnect the developing bias connector ③ from the pole orientation plate ②.

Note:

Hold down the pole orientation plate with fingers when disconnecting the developing bias connector; otherwise, the pole orientation plate can come off the developing cylinder.

- 3) Remove the mounting screw ④, and detach the developing assembly stop ⑤.
- 4) Turn the developing assembly release lever ⑥ counterclockwise to release the developing assembly from the photosensitive drum; then, slide it out carefully.

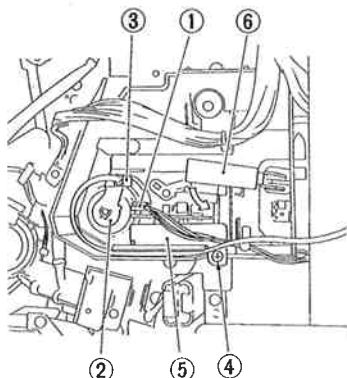


Figure 4-601

- 5) Slide the dust-proof shutter ⑦ in the direction of the arrow to prevent intrusion of foreign matter into the developing assembly; then, close the toner supply mouth.

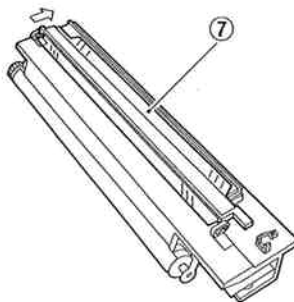


Figure 4-602

3. Attaching the Developing Assembly

Attach the developing assembly by reversing the foregoing steps with the following in mind.

- ① Clean the developing assembly rail before inserting the developing assembly into the copier.
- ② Make sure that the dust-proof shutter is shifted in the direction of the arrow when sliding the developing assembly into the copier.

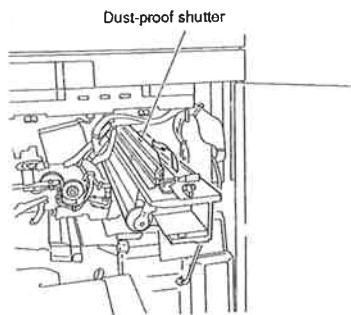


Figure 4-603

- ③ Make sure that the developing assembly will not hit against other parts.

4. Detaching the Blade/Developing Cylinder

- 1) Detach the developing assembly; p. 4-64.
- 2) Remove the two mounting screws ① from below the dust-proof shutter, and detach the upper cover.

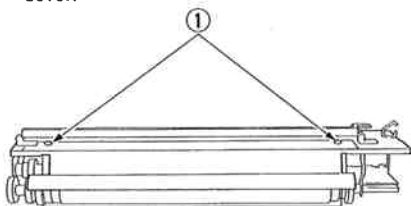


Figure 4-604

- 3) Place a newspaper on the floor, and empty the developing assembly.
- 4) Remove the mounting screw ② (w/ toothed washer) at the front of the developing assembly, and detach the pole orientation plate ③.

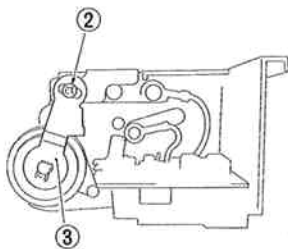


figure 4-605

- 5) Insert a sheet of copy paper between the blade and the developing cylinder.
- 6) Remove the four mounting screws ④, and detach the blade mount together with the blade. AT the time, take care so that the blade will not hit the developing cylinder.

Note:

Do not detach the blade from its mount.

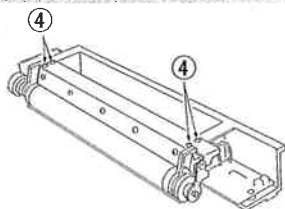


Figure 4-606

- 7) Remove the grip ring ⑤, plastic film ⑥, spacer ⑦, roller ⑧, and C-ring ⑨ in the order given in Figure 4-607 from the cylinder shaft at the front of the developing assembly.

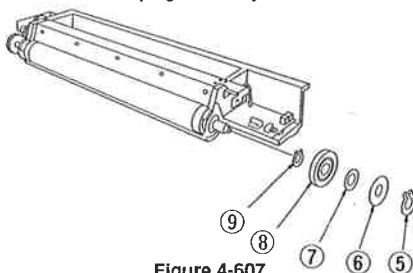


Figure 4-607

- 8) Remove the two mounting screws ⑩, and detach the gear support plate ⑪.

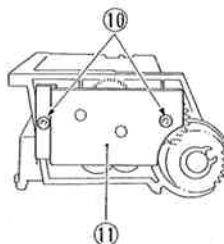


Figure 4-608

- 9) Detach the gear ⑫; then, detach the gear ⑬, and detach the bearing from inside the gear ⑬.

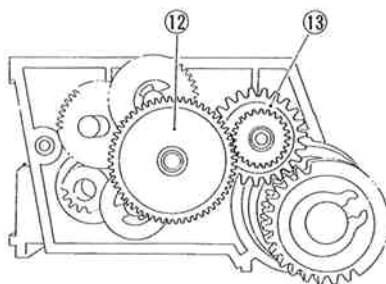


Figure 4-609

- 10) Detach the grip ring ⑭, gear ⑮, E-ring ⑰, gear ⑱, grip ring ⑳, plastic film ㉑, roller ㉒, and spacer ㉓ in the order named from the cylinder shaft at the rear.

Note:

The gear ⑮ and the gear ⑰ are equipped with parallel pins; take care not to lose them.

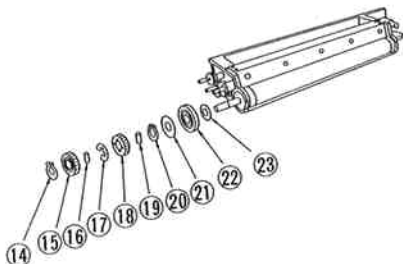


Figure 4-610

- 11) Detach the bearing from the front and the rear, and detach the developing cylinder.

Note:

Do not leave fingerprints or oil on the surface of the developing cylinder. If soiled, dry wipe it using lint-free paper.

If the image over the section corresponding to the area wiped tend to be too light, use lint-free paper moistened with water. Do not use solvent.

5. Attaching the Side Seal

- 1) Detach the developing cylinder from the developing assembly.
- 2) Push in the inner seal into the side seal.

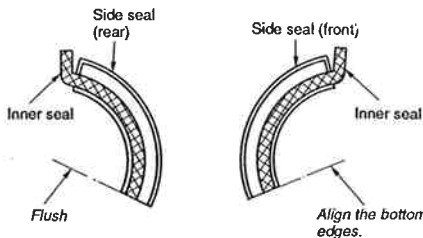


Figure 4-611

Align the bottom edges. Bring down the side seal into the specified position of the developing assembly, and attach the cylinder.

- 3) Bring down the side seal into the specified position of the developing assembly, and attach the cylinder.
- 4) Attach the blade as shown together with the blade mount.

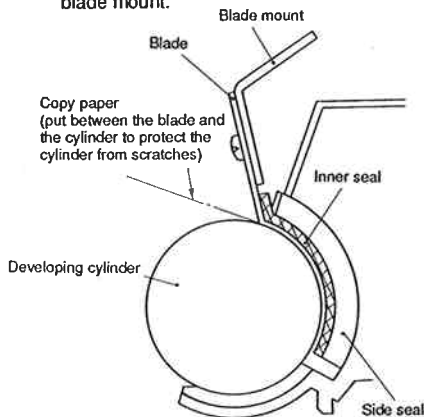


Figure 4-612

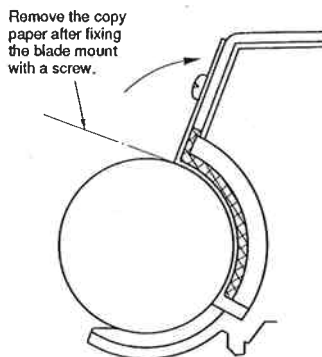


Figure 4-613

B. Hopper Assembly

1. Detaching the Hopper Assembly

- 1) Detach the developing assembly; p. 4-64.
- 2) Open the top cover of the hopper.
- 3) Remove the four mounting screws, and detach the hopper supply mouth cover.
- 4) Disconnect the two connectors, and lift the hopper to detach.

Note:

Clean the developing assembly rail before inserting the developing assembly into the copier.

VII. DRUM CLEANING SYSTEM

A. Drum Cleaner

1. Construction

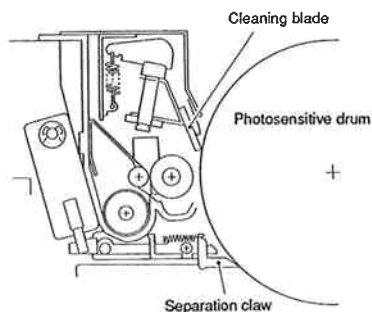


Figure 4-701

2. Detaching the Cleaning Blade

- 1) Slide out the drum unit; see p. 4-56.
- 2) Detach the pre-exposure lamp assembly from the drum unit; see p. 4-55.
- 3) Remove the five mounting screws ①, and detach the cleaning blade ②.

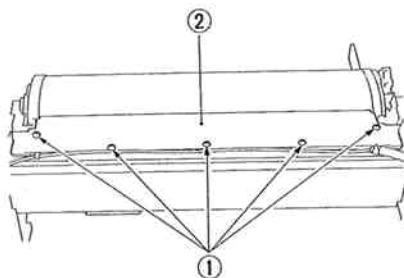


Figure 4-702

- 4) Remove the mounting screw ③ and roll ④; then, remove the leaf spring ⑤.

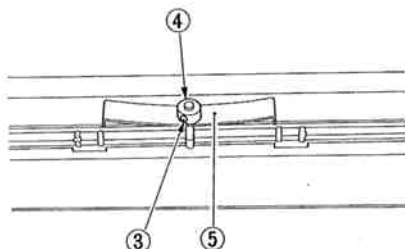


Figure 4-703

- 5) Loosen the five mounting screws ⑥, and detach the cleaning blade from the blade support plate.

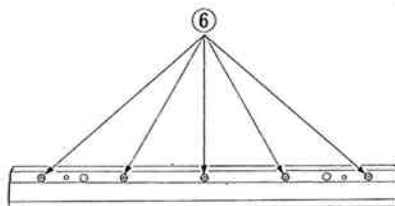


Figure 4-704

3. Attaching the Cleaning Blade

Attach the cleaning blade going over the foregoing steps in reverse; be sure to fix the cleaning blade in place while pushing it against the rear. After attaching the cleaning blade, make sure that the edge of the blade is not appreciably damaged.

4. Attaching the Side Seal

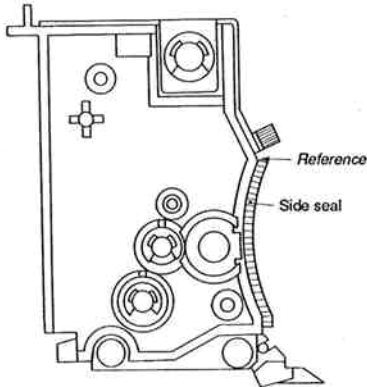


Figure 4-705

Make sure that the side seal does not stick out inside the cleaning case.

B. Separation Claw Drive Assembly

1. Detaching the Separation Claw Drive Assembly

- 1) Detach the drum unit; p. 4-56.
- 2) Remove the two mounting screws ①, and detach the separation claw drive assembly.

Note:

- i. Take care not to bend the separation claw.
- ii. Take care not to scratch the photosensitive drum.

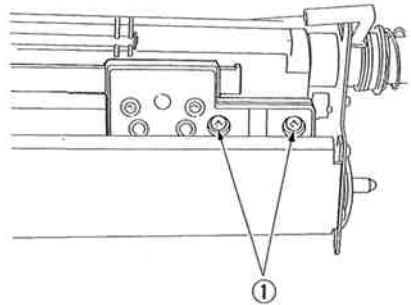


Figure 4-706

C. Waste Toner Feeder Assembly

- 1) Slide out the drum unit; p. 4-56.
- 2) Detach the rear cover, and remove the two mounting screws; then, open the DC controller PCB.
- 3) Detach the exhaust fan ① and the main motor controller PCB assembly ②.

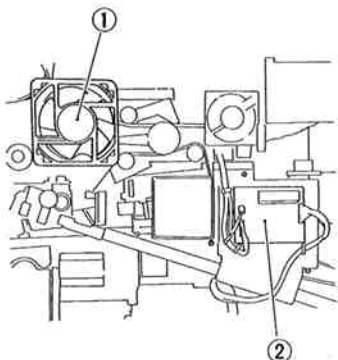


Figure 4-707

- 4) Remove the mounting screw ③, and detach the waste toner feedscrew lock sensor assembly ④.
- 5) Remove the three mounting screws ⑤, and detach the waste toner feeder assembly.

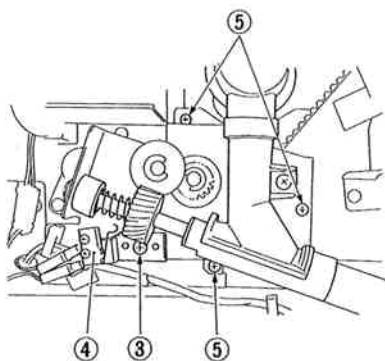


Figure 4-708

VIII. FIXING SYSTEM

A. Fixing Assembly

1. Construction

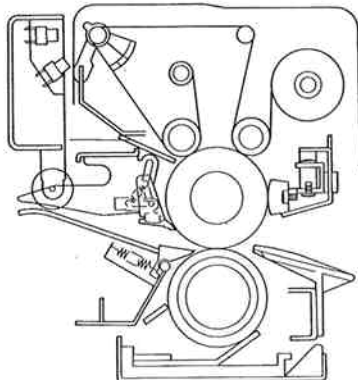


Figure 4-801-1

2. Locking Mechanism

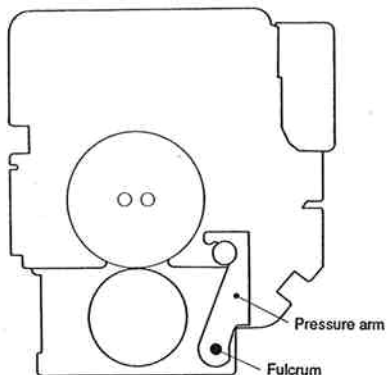


Figure 4-801-2

3. Detaching the Fixing Assembly

- 1) Slide the fixing assembly to the front until it stops, and detach the fixing assembly cover.
- 2) Remove the mounting screw ①, and detach the fixing assembly stop; then, pull the fixing assembly to the front, and lift it to detach.

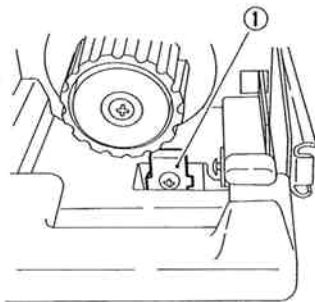


Figure 4-802

Note:

Do not hold the connector assembly at the rear when lifting the fixing assembly.

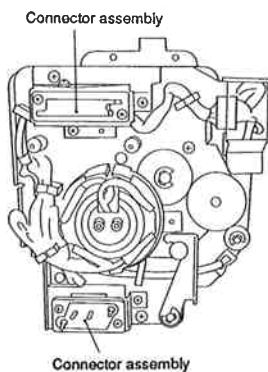


Figure 4-803

4. Repositioning the Fixing Lock Solenoid

Perform this adjustment after taking the fixing assembly out and removing the process cover.

As Figure 4-804 shows, adjust the solenoid's position so that the distance "b" is 6.6 ± 0.2 mm when the plunger is butted against the stop shaft.

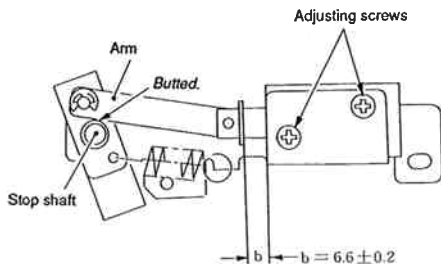


Figure 4-804

5. Detaching the Lower Roller

- 1) Detach the fixing assembly.
- 2) Pull the upper roller assembly lock lever (front, rear) to open the upper roller assembly. Take care; opening the upper roller assembly causes its weight to move to the right.
- 3) Slide the paper guide plate ① in the direction of the arrow.

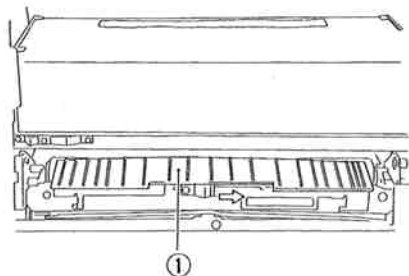


Figure 4-805

- 4) Remove the screw ② at the front and the screw ③ at the rear; then, shift the lower separation claw assembly into the direction of the arrow.

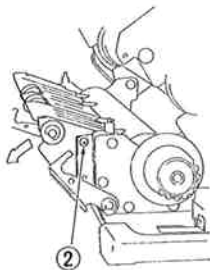


Figure 4-806

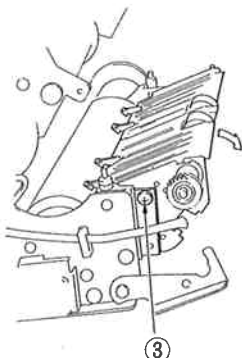


Figure 4-807

- 5) Remove the two mounting screws, and detach the fixing roller blade.
- 6) Lift the lower roller to detach.
- 7) Detach the bearing (front, rear) from the lower roller.

Note:

Take not of the following when closing the upper roller assembly:

- i. Close it slowly.
- ii. Close it while pushing the lever up so that the relationship between the lever used to transmit the reciprocating drive to the upper separation claw and the pulley of the delivery roller is as shown.

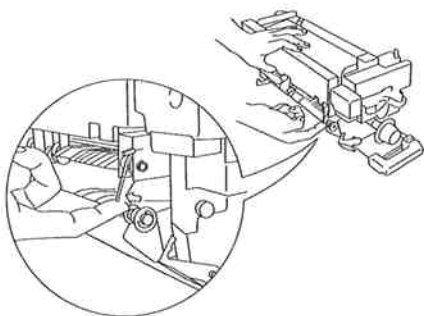


Figure 4-808

6. Detaching the Heater

- 1) Detach the fixing assembly.
- 2) Remove the six fastons ① at the front and the rear from the heater.

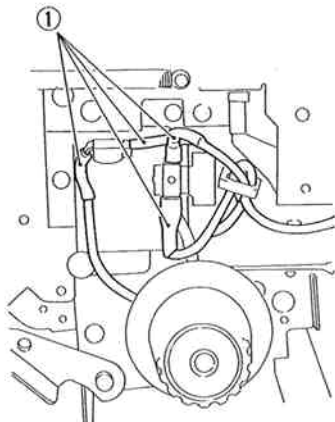


Figure 4-809-1

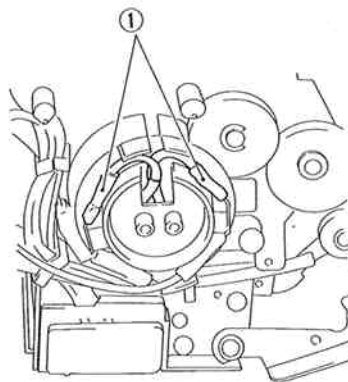


Figure 4-809-2

- 3) Remove the two binding screws, and detach the heater guide at the rear taking care not to deform the heater guide.
- 4) Remove the four mounting screws at the front, and detach the two heater support plates.

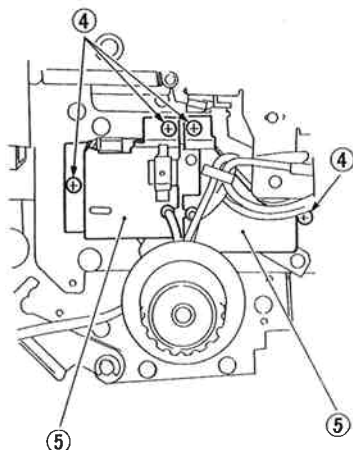


Figure 4-810

- 5) Pull the heater slowly to the rear taking care not to damage the heater.

7. Attaching the Heater

Attach the heater using the foregoing steps in reverse order with the following in mind:

- i. Do not touch the surface of the heater.
- ii. Attach it so that the longer of the heater side wires from both ends of the heater is toward the front; for both heaters.
- iii. Attach the longer heater on the right and the shorter heater on the left when viewed from the front of the fixing assembly. (115V only)

8. Detaching the Upper Roller

- 1) Detach the fixing assembly; see p. 4-71.
- 2) Remove the mounting screw, and detach the fixing assembly upper cover.
- 3) Remove the two screws ① that hold the cleaning assembly to release the belt.

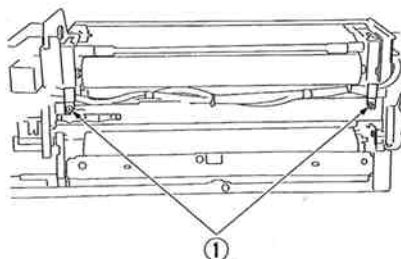


Figure 4-811

- 4) Remove the C-ring ② at the rear of the upper roller, and detach the gear ③.

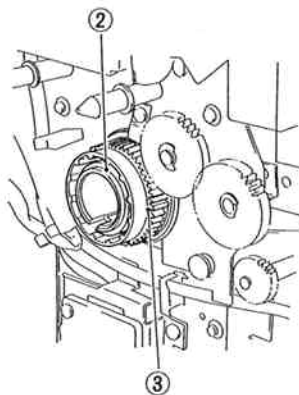


Figure 4-812

- 5) Detach the bearing support plates ④ (front, rear; 4 in total), and detach the bearing ⑤ at the rear.

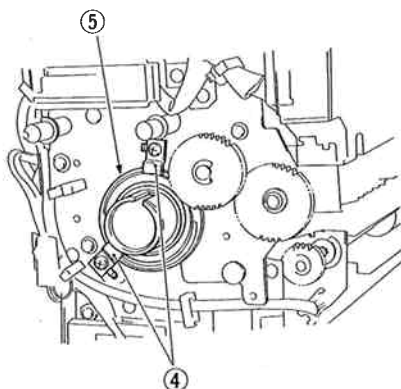


Figure 4-813-1

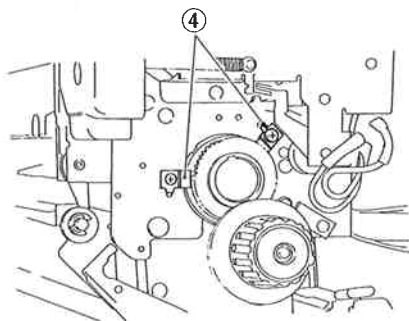


Figure 4-813-2

- 5) Detach the bearing at the front of the upper roller from the side plate, and detach the upper roller while taking care not to damage the thermistor and the thermal switch.
- 6) Detach the C-ring, gear, insulating bush, and bearing at the front of the removed roller; then, detach the insulating bush at the rear of the roller.

9. Attaching the upper roller

Attach the upper roller using the foregoing steps in reverse order with the following in mind.

- ① Upper Roller
Wrap the roller in copy paper to protect it against dirt and damage.
- ② Orientation of Upper Roller
Attach the upper roller so that length A (insulating collar) is toward the rear.

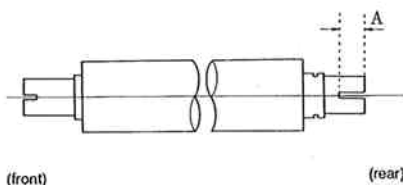


Figure 4-814

10. Detaching the Thermistor

- 1) Detach the fixing assembly.
- 2) Remove the mounting screw, and detach the fixing assembly upper cover.
- 3) Remove the two mounting screws ①, and open the cleaning belt assembly.

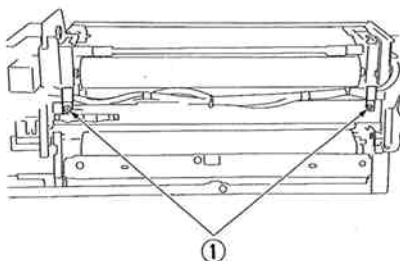


Figure 4-815

- 4) Remove the mounting screw ②, and detach the thermistor assembly.

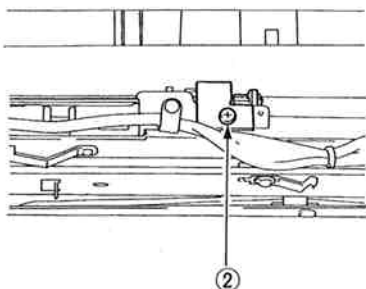


Figure 4-816

11. Detaching the Upper Separation Claw

- 1) Detach the fixing assembly.
- 2) Push the upper separation claw unit release button, and open the upper separation claw unit.
- 3) Detach the spring ①, and detach the upper separation claw ②.

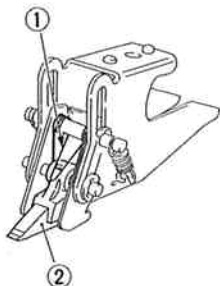


Figure 4-817

Note:

To close the upper separation claw unit, close it slowly while pressing the upper separation claw unit release button.

12. Detaching the Lower Separation Claw

- 1) Detach the fixing assembly.
- 2) Shift the lock lever to release the roller; then, open the upper roller assembly.
- 3) Remove the mounting screw ① at the rear and the front of the fixing assembly, and open the lower separation claw unit slowly.

(front)

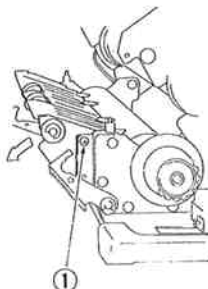


Figure 4-818-1

(rear)

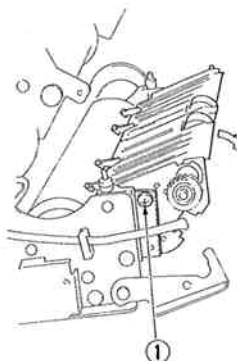


Figure 4-818-2

- 4) Remove the mounting screw, and detach the lower separation claw together with the support plate.
- 5) Detach the tension spring, and detach the lower separation claw.

13. Replacing the Fixing Assembly Cleaning Belt

a. Detaching the Fixing Assembly Cleaning Belt

Cleaning belt unit (front view)

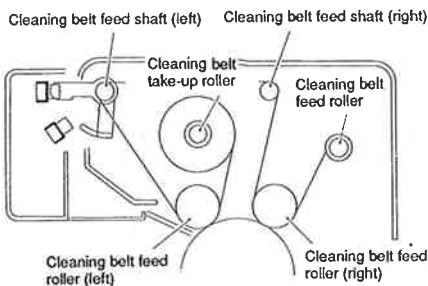


Figure 4-819

- 1) Open the front door, and slide out the fixing assembly from the copier.
- 2) Pick the stop pin, and remove it; detach the fixing assembly upper cover.
- 3) Remove the two mounting screws ①, and open the cleaning belt unit.

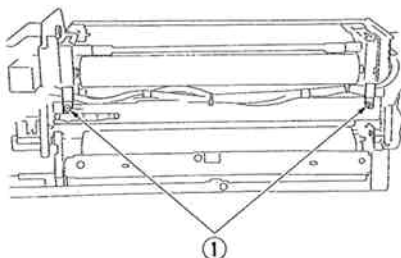


Figure 4-820

- 4) Remove the two mounting screws ②, and close the cleaning belt unit; make sure that the cleaning belt feed roller (right) ③ will open into the direction of the arrow shown in Figure 4-821.

(top view)

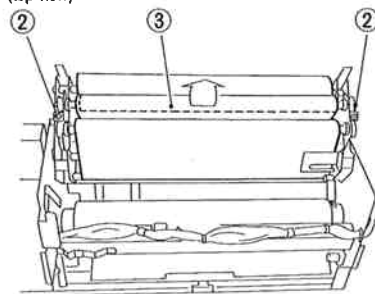


Figure 4-821

- 5) Slide the cleaning belt feed roller ④ to the rear out of the bushing at the front and then out of the bushing at the rear.

(right view)

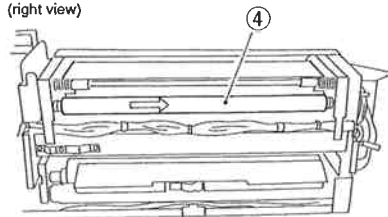


Figure 4-822

- 6) Open the cleaning belt unit once again, and open the cleaning belt feed roller (right).

- 7) Lead the cleaning belt feed shaft ⑥ between the two cleaning belt feed rollers ⑤; then, close the cleaning belt feed rollers (right) and the cleaning belt unit.

(top view)

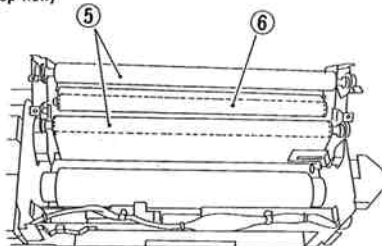


Figure 4-825

- 8) Detach the cleaning belt feed roller from the cleaning belt unit.
 9) Open the upper separation claw unit ⑦ halfway, and push the cleaning belt feed roller ⑧ inside through the gap.

(upper right view)

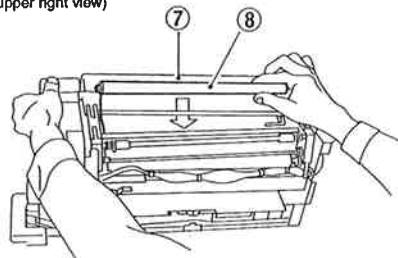


Figure 4-824

- 10) Open the cleaning belt unit, and open the cleaning belt feed roller (right).

- 11) Slide the cleaning take-up roller to the rear out of the bushing at the rear and then out of the bushing at the front.

(top view)

Cleaning belt take-up shaft

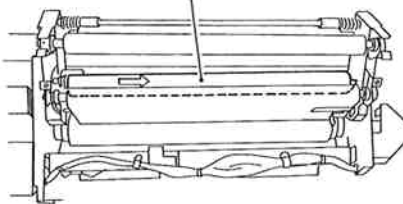


Figure 4-825

- 12) Detach the cleaning belt from the cleaning belt unit.

b. Attaching the Cleaning Belt

Cleaning belt unit (front view)

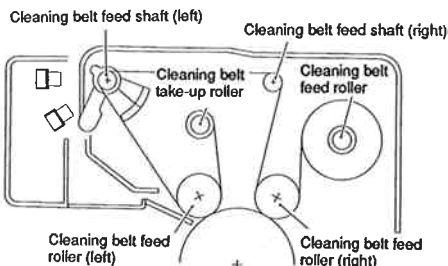


Figure 4-826

- 1) Attach the cleaning belt roller ① with the cleaning belt unit closed; fit the feed shaft in the bushing at the rear, slide it to the rear, and then fit it in the bushing at the front.

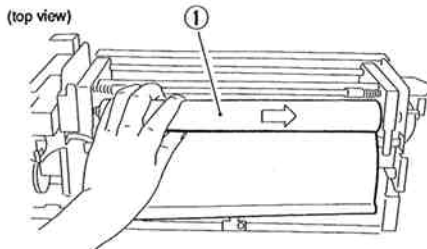


Figure 4-827

- 2) Open the cleaning belt unit, and open the cleaning belt feed roller (right) ②.
- 3) Hook the cleaning belt on the cleaning belt feed roller (right); then, put the cleaning belt take-up shaft ③ down through the two cleaning belt feed rollers.

(top view)

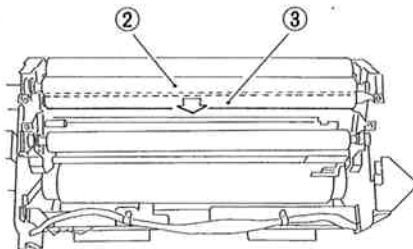


Figure 4-828

- 4) Close the cleaning belt feed roller (right) ④ and the cleaning belt unit.
- 5) Take out the cleaning belt take-up shaft ⑤, and hook the cleaning belt on the cleaning belt guide shaft (right) and the cleaning belt guide shaft (left) ⑥.

(top view)

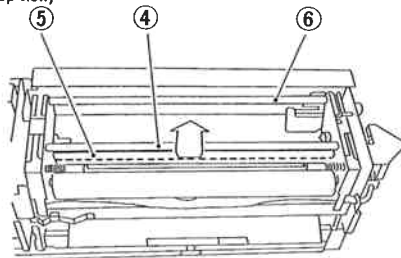


Figure 829

- 6) Keep the cleaning belt unit open halfway, and put the cleaning belt take-up roller ⑧ through the gap between the cleaning belt guide shaft (left) ⑦ and the upper separation claw unit ⑨.

(upper right view)

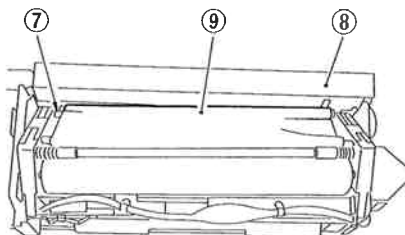


Figure 4-830

- 7) Open the cleaning belt unit, and open the cleaning belt feed roller (right).
- 8) Hook the cleaning belt on the cleaning belt feed roller (left) ⑩, and put the cleaning belt take-up roller ⑪ between the two cleaning belt feed rollers.

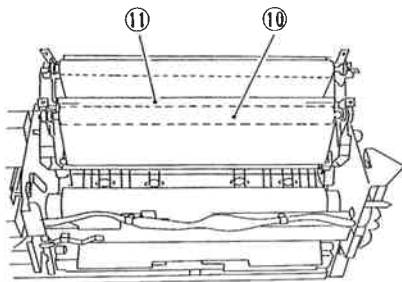


Figure 4-831

- 9) Fit the cleaning belt take-up roller in the bushing at the rear; then, slide the shaft to the rear, and set it in the bushing at the front.

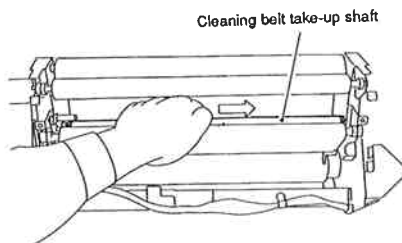


Figure 4-832

- 10) Close the cleaning belt feed roller (right), and fix it in place using two mounting screws.
- 12) Move the cleaning belt drive lever up and down several times with fingers to take up the slack; check by the naked eye.

(verify)

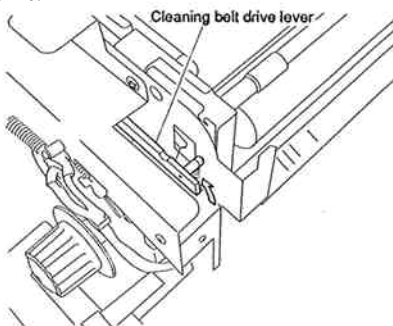


Figure 4-833

- 13) Attach the fixing assembly upper cover, and attach the fixing assembly to the copier.

14. Detaching the Oil Felt

- 1) Detach the fixing assembly from the copier, and detach the lower fixing roller; see p. 4-72.
- 2) Remove the two mounting screws ①, and detach the oil felt ②.

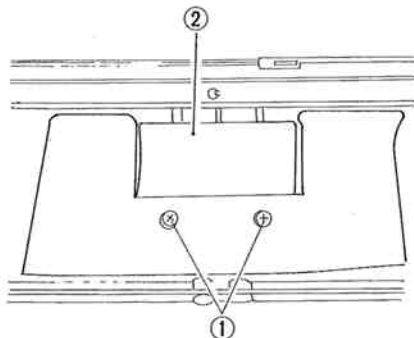


Figure 4-834

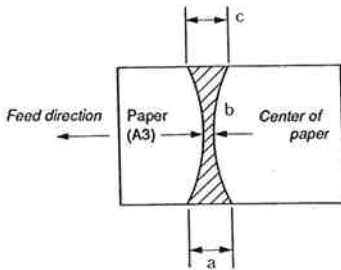
15. Adjusting the Nip Width (tightening the pressure adjusting hex nut)

Adjust the nip width when the upper roller or the lower roller has been replaced or if fixing faults are noted.

If the rollers are cold, wait about 15 min after the wait-up period is over; then, make 20 copies, and take measurements.

Measurement

- 1) Lift the copyboard cover, and make a solid black copy (A3).
- 2) Switch the machine OFF as soon as the leading edge of the copy paper comes out to the copy tray, and open the front door.
- 3) Turn the fixing assembly knob clockwise slightly; after 15 sec, turn the knob further to remove the paper.
- 4) Measure the width of the section shown in Figure 4-00; the toner on the section should be shiny.



Note:

a and c represents points 10 mm from both ends of the paper.

Dimension	Measurements*
b	7.5 ± 0.5 mm
a-c	0.5 mm or less

Table 4-00

- * Makes sure that the upper and lower rollers are adequately heated.

- 5) If the measurements are outside the standards, turn the adjusting ut found at the rear and the front of the fixing assembly.

11. Positioning the Paper Guide Plate

Place the fixing assembly on a desk, and move the paper guide mount so that the distance from the desk is 45.7 ± 0.2 mm.

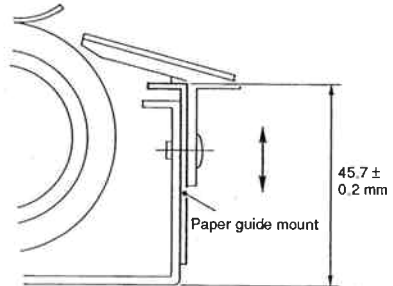


Figure 4-835

IX. ELECTRICAL

A. High-Voltage Transformer Assembly

1. Detaching the High-Voltage Transformer Assembly

- 1) Detach the upper cover; see p. 4-3.
- 2) Remove the seven high-voltage harnesses ① and disconnect the connector ② from the high-voltage transformer assembly.

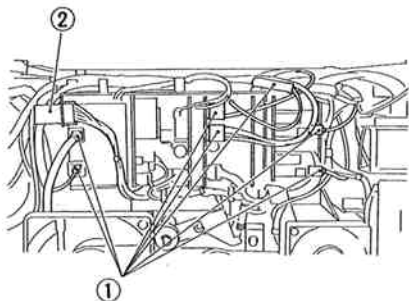


Figure 4-901

- 3) Remove the mounting screw (w/toothed washer) ③ found at the top of the C.F.F. connector assembly; then, detach the grounding wire ④.

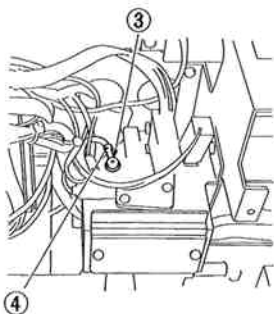


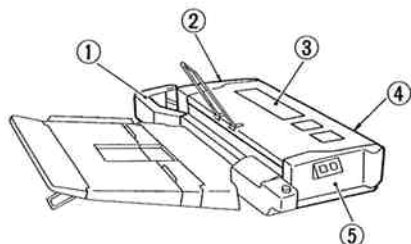
Figure 4-902

- 4) Detach all harnesses from the harness guide found at the top of the high-voltage transformer.
- 5) Remove the three mounting screws, and detach the high-voltage transformer assembly while paying attention to the scanner drive cable.

X. C.F.F.

A. External Covers

1. Externals



- ① Arm
- ② Rear cover
- ③ Right cover
- ④ Front cover
- ⑤ Upper cover

Figure 4-1001

2. Detaching the Upper Cover

- 1) Slide the release knob ① into the direction of the arrow.

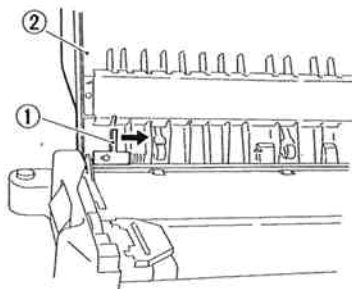


Figure 4-1002

B. Feed Key

- 1) Remove the two mounting screws ② of the front cover ①.

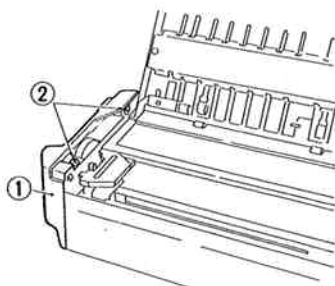


Figure 4-1003

- 2) Open the front cover ①, and disconnect the connector ③.

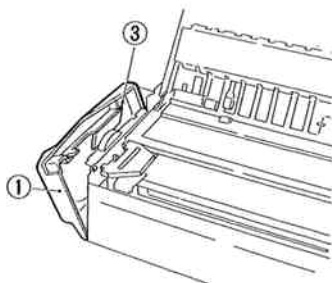


Figure 4-1004

C. Exhaust Fan

- 1) Remove the three mounting screws ②, and detach the document guide plate ①.

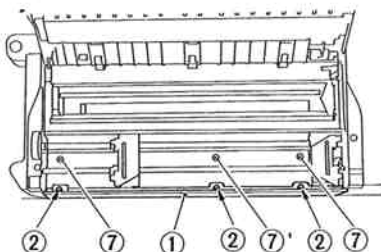


Figure 4-1005

- 2) Remove the screw ③ of the width VR.

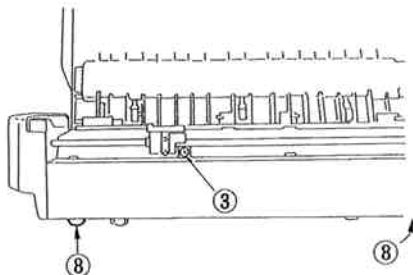


Figure 4-1006

- 3) Detach the right cover; 3 screws on the face ⑦, 2 screws on the back ⑧.

Note:

The sensor ⑦ is tightened together with the grounding plate of the paper sensor; do not turn or bend it.

- 4) Cut the harness band, if necessary, that holds the exhaust fan harness in place.
- 5) Remove the mounting screws ④ and disconnect the connectors ⑤ of each fan, and detach the exhaust fan ⑥.

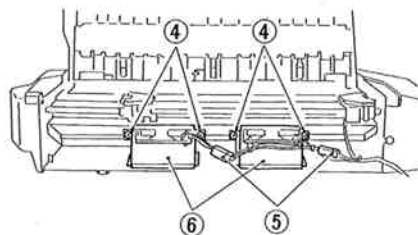


Figure 4-1007

XI. EXPOSURE SYSTEM

A. Scanning System

1. Detaching the C.F.F. Lamp

- 1) Detach the upper cover.
- 2) Remove the two mounting screws ①, and open the platen glass mount ②.

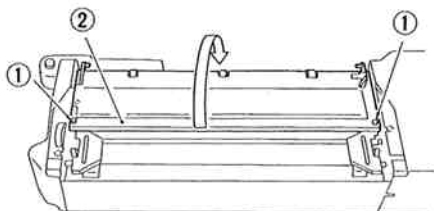


Figure 4-1101

- 3) Detach the glass support plate ③ and the thermoswitch ④.

Note:

A thermoswitch plate is found under the thermoswitch ④; do not drop or forget it when detaching or attaching the switch.

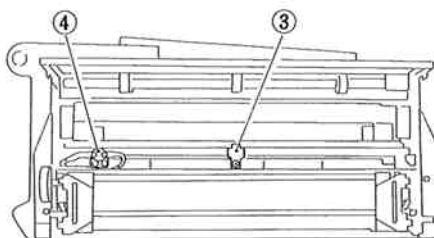


Figure 4-1102

- 4) Remove the mounting screw ⑤ at the front and the stepped screw ⑥ at the rear; then, detach the reflector plate ⑦.

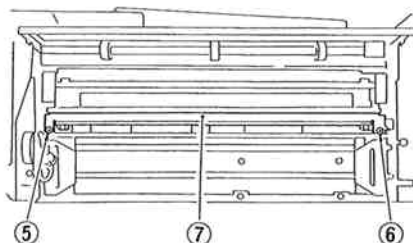


Figure 4-1103

- 5) Press the lamp electrode (rear) ⑧ to detach the lamp ⑨.

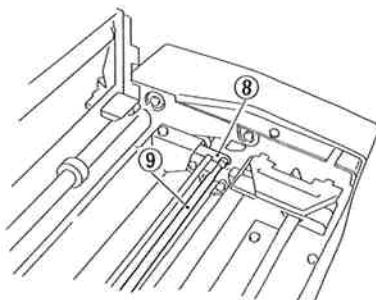


Figure 4-1104

2. Attaching the C.F.F. Lamp

- i. Be sure to use a stepped screw at the rear of the reflector plate.
- ii. Make sure that the thermoswitch and the thermoswitch plate are in contact with the reflector plate.

XII. DRIVE/ELECTRICAL SYSTEM

A. C.F.F. Controller PCB

- 1) Detach the document stack tray.
- 2) Remove the three mounting screws ①, ②, ③, and detach the grip cover ④.

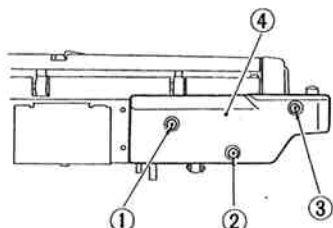


Figure 4-1201

Note:

The screw ③ is a self-tapping screw; do not tighten it excessively.

- 3) Detach the microswitch and the actuator ⑤.

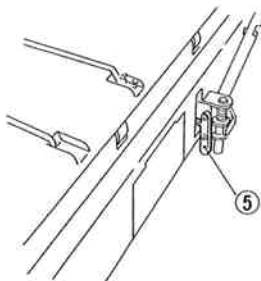


Figure 4-1202

- 4) Remove the mounting screws ⑥, and detach the arm ⑦.

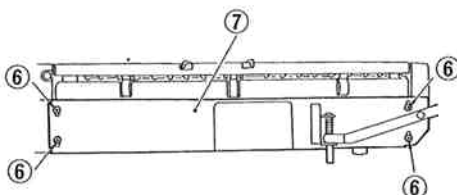


Figure 4-1203

- 5) Disconnect the connector of the C.F.F. controller PCB ⑧, and detach the PCB.

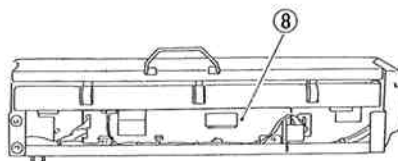


Figure 4-1204

B. C.F.F. Motor

- 1) Disconnect the connector of the C.F.F. controller PCB.
- 2) Detach the rear cover.
- 3) Mark the position of the connector mount ① using a scribe; then, remove the screws ②, ③, and loosen the screw ④.

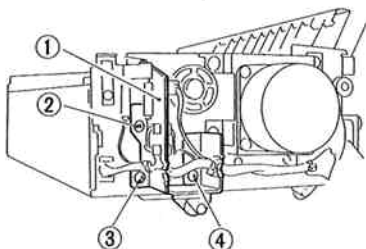


Figure 4-1205

- 4) Slide the connector mount, and detach the clock plate ⑥ using a hex wrench ⑤.

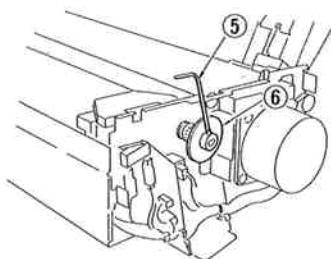


Figure 4-1206

- 5) Detach the drive belts ⑦.

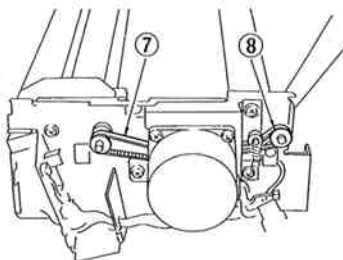


Figure 4-1207

- 6) Remove the mounting screw ⑥, and detach the C.F.F. motor ⑨.

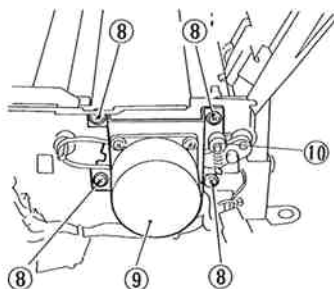


Figure 4-1208

- 7) When attaching the C.F.F. motor, tighten the screw ⑥ first, and then the screw ⑧ lightly. Then, make sure that the tensioner ⑩ is firmly pushing against the belt, and tighten the screw ⑧.

C. Replacing the ROM

- 1) Detach the document stack tray.
- 2) Remove the mounting screw ① from the bottom of the C.F.F., and detach the ROM cover ②.

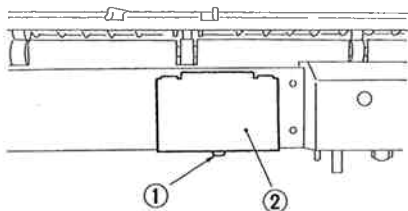


Figure 4-1209

- 3) Replace the ROM ③ taking care not to damage the elements nearby.

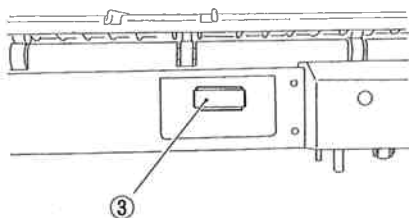


Figure 4-1210

CHAPTER 5

INSTALLATION

I. CHOOSING THE SITE.....	5-1	III. RELOCATING THE MACHINE	5-25
II. UNPACKING AND INSTALLATION	5-2	IV. ATTACHING CONTROL CARD V.....	5-26

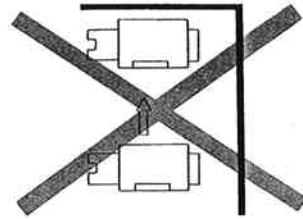
I. CHOOSING THE SITE

It is important to keep the following in mind; if possible, visit the user in advance.

- i. Make sure that the site is kept between 15° and 30°C and its humidity is between 5% and 80%; avoid water faucets, water boilers, humidifiers, and refrigerators.
- ii. Avoid open fires or areas subject to dust or ammonium gas; avoid direct sunlight and install curtains if necessary.
- iii. Under normal conditions, the level of ozone generated by the machine should not affect the individuals around the machine. If the room is not properly ventilated, however, some may find it unpleasant. Make sure that the room is well ventilated to avoid such a problem.
- iv. Make sure that the machine's feet are in contact with the floor.
- v. Keep the machine at least 18 cm away from any wall, and provide space for access.

- v. Make sure that the room is well ventilated. If multiple copiers exist in the same room, consider the arrangement of the copiers so that the current of air will not be hindered.

In general, the silicone gas (vapor from the fixing assembly) soils the corona wires, shortening the life of the wires. Keep in mind that this tendency is more conspicuous in a low-humidity environment.



NO GOOD

Figure 5-4

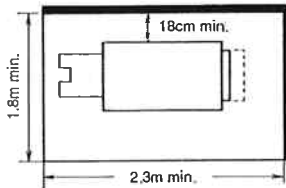


Figure 5-1

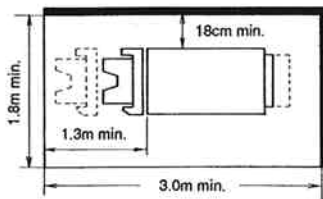


Figure 5-2 With Sorter

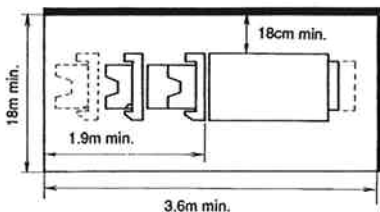
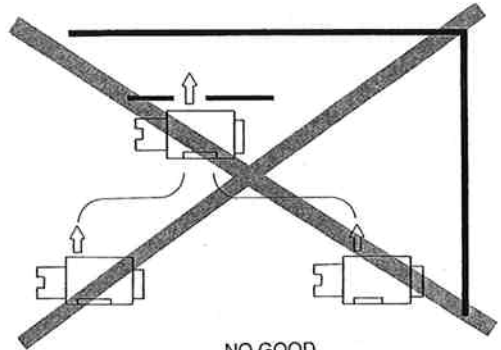


Figure 5-3 (tandem)



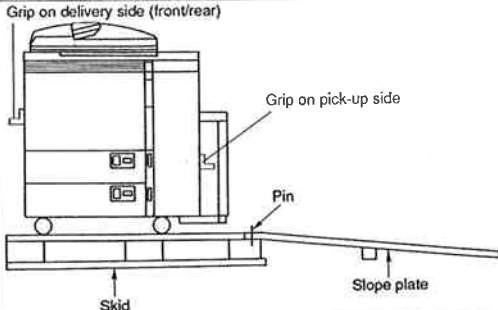
NO GOOD

Figure 5-5

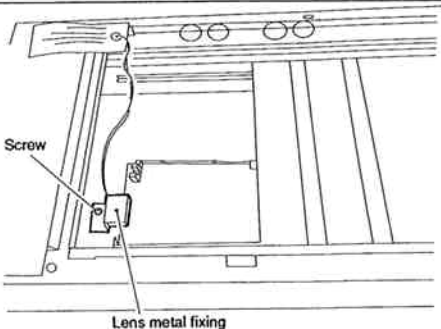
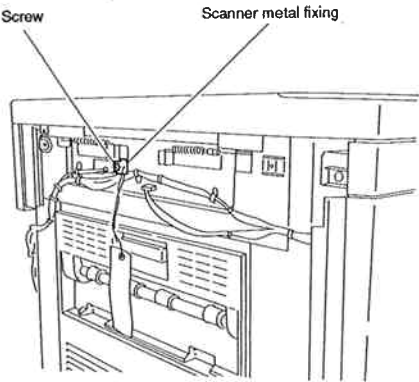
II. UNPACKING AND INSTALLATION

When a piece of metal is brought in from a cold place to a warm room, droplets of water can form on its surface. This phenomenon is called *condensation*, and copiers suffering condensation may fail to produce images. If condensation is expected, leave the machine alone without unpacking for one hour or more and start the work after it has become fully used to the room conditions.

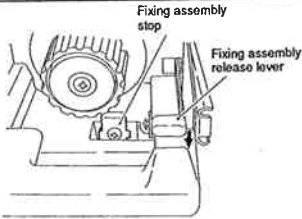
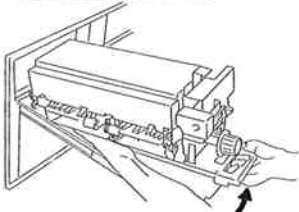
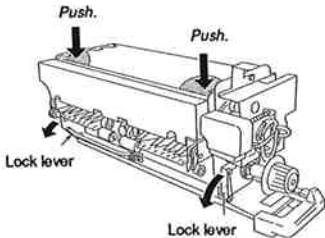
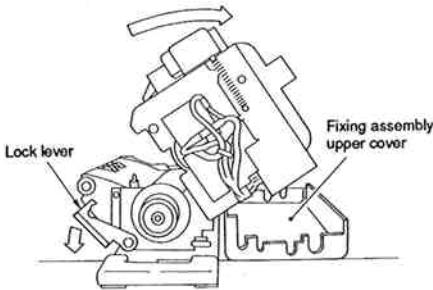
A. Unpacking

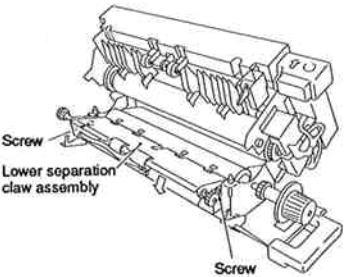
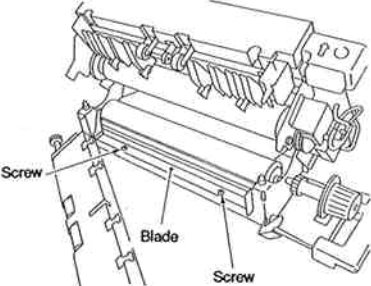
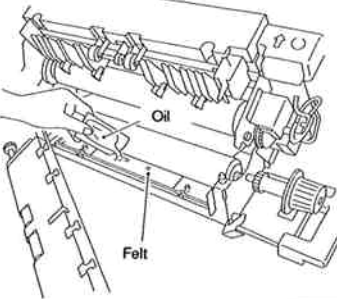
Step	Work	Checks/Remarks
1	Open the shipping box containing the copier, and remove the plastic covering.	
2	Hold the copier by the grips on its pick-up side and its base; lift the copier slightly, and detach the two pads. (Do not hold the lifter on the side tray.)	Work in a group of two; the copier weighs about 225 kg.
3	Hold the copier by the grip (front/rear) on its delivery side; lift the copier slightly, and detach the two bottom pads. (Do not hold the base of the front tray.)	Work in a group of two; the copier weighs about 225 kg.
4	Take out the two slope plates. (The plates are found as part of the skid.)	
5	Turn over the slope plate; then, match the pin hole of the skid and the pin hole of the slope plate, and fit the pin. (The pin is taped to the lower pad box.) Push the copier slowly along the slope plate.	
6	Open the accessory box, and take out the parts and materials from inside.	Check that the following are available: • Photosensitive drum • Copy tray • Operator's Manual • Side tray cover • Hinge cover • Grip cover/Mounting screw • Fixing assembly oil
7	Detach the three grips, and attach the three grip covers using the screws that come with the copier.	

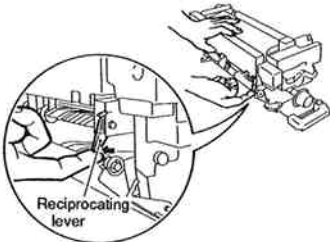
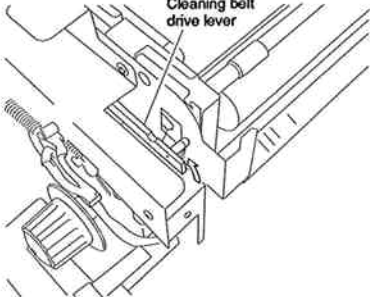
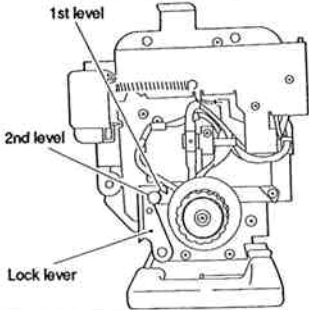
B. Attaching the Lens and the Optical Unit

Step	Work	Checks/Remarks
1	Remove the tape from the copier.	
2	Open the RDF-A1.	Remove the protective tape from the size index and the copyboard glass.
3	Remove a screw, and detach the copyboard glass retainer (right); then, detach the copyboard glass.	
4	Remove the lens metal fixing. <i>(Keep the fixing for possible relocation of the machine.)</i>	 Screw Lens metal fixing
5	Push the copyboard glass into the left rear, and attach the copyboard glass (right).	
6	Close the RDF-A1.	
7	Remove the eight screws, and detach the left cover; then, remove the screw, and remove the scanner metal fixing. <i>(Keep the metal fixing for possible relocation of the machine.)</i>	 Screw Scanner metal fixing
8	Attach the left cover.	

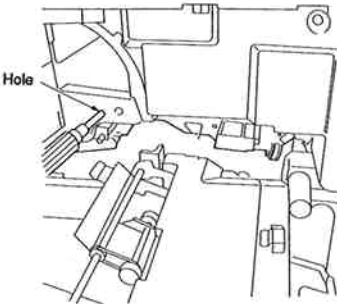
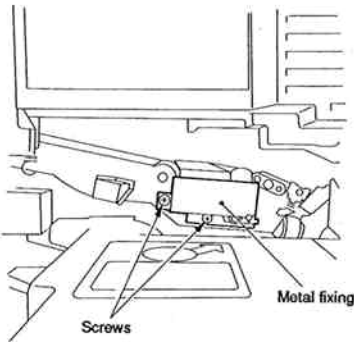
C. Attaching the Fixing Assembly

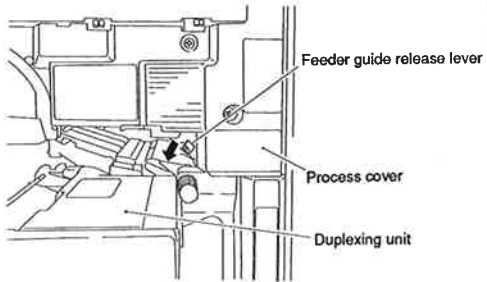
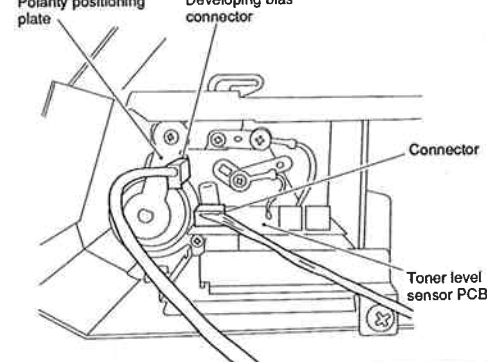
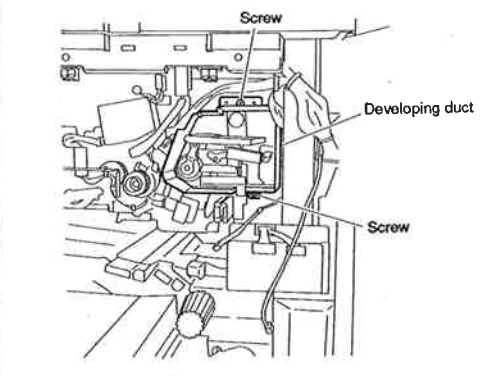
Step	Work	Checks/Remarks
1	Open the left/right front doors, and detach the fixing assembly cover.	
2	Shift down the fixing assembly release lever, and slide out the fixing assembly.	
3	Remove the screw and the fixing assembly stop; pull the fixing assembly farther to the front while holding down the release lever. Then, take out the fixing assembly while holding its grip at the front and its bottom. Do not hold the connector assembly or the heater electrode assembly when lifting the fixing assembly.	
4	Remove the two screws (front, rear; w/ tag) from the fixing assembly lock lever.	
5	Push the shaded sections (see diagram) to release the lock levers (front, rear).	
6	Remove the screw from the front of the fixing assembly upper cover, and detach the cover.	
7	Open the top of the fixing assembly; at the time, use the fixing assembly upper cover as a support.	

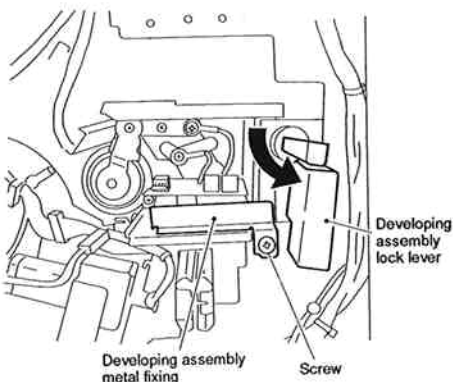
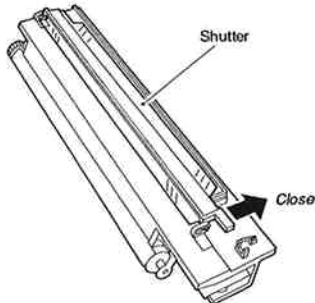
Step	Work	Checks/Remarks
8	Remove the two mounting screws (front, rear), and detach the lower separation claw assembly.	 Screw Lower separation claw assembly Screw
9	Remove the two mounting screws, and detach the fixing roller blade.	 Screw Blade Screw
10	Apply silicone oil to the felt inside the oil pan. Take care not to leave oil on the lower roller. If you inadvertently put oil on the roller, wipe it using lint-free paper.	 Oil Felt
11	Attach the fixing roller blade, and attach the lower separation claw assembly.	

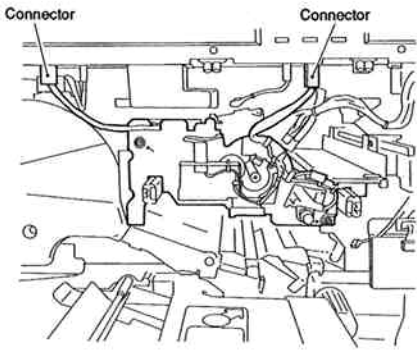
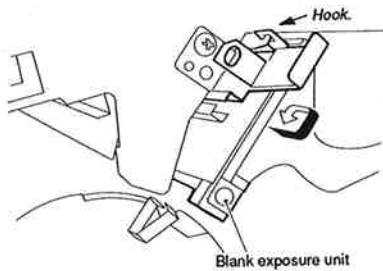
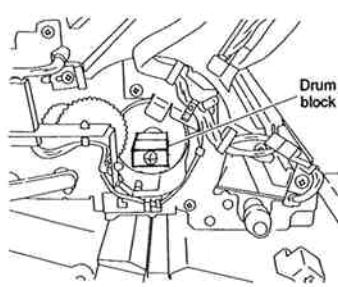
Step	Work	Checks/Remarks
12	Close the top of the fixing assembly while paying attention to the position of the reciprocating lever used to drive the upper separation claw.	
13	Move the cleaning belt drive lever up and down several times to take out the slack; check it by the naked eye. Then, attach the fixing assembly upper cover using a fixing screw.	
14	Push the top of the fixing assembly, and set the front and the rear of the lock lever (2nd level).	
15	Place the fixing assembly on the rail.	
16	Attach the fixing assembly stop.	
17	Attach the fixing assembly cover.	
18	Slide the fixing assembly into the copier carefully.	Move to installation of the photosensitive drum with the front doors open.

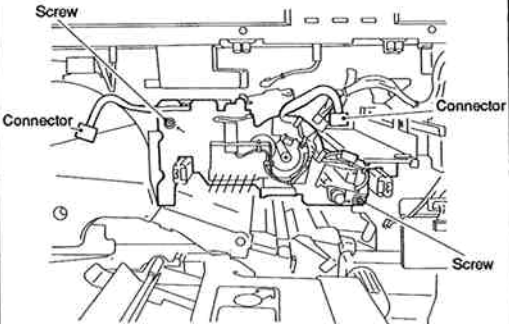
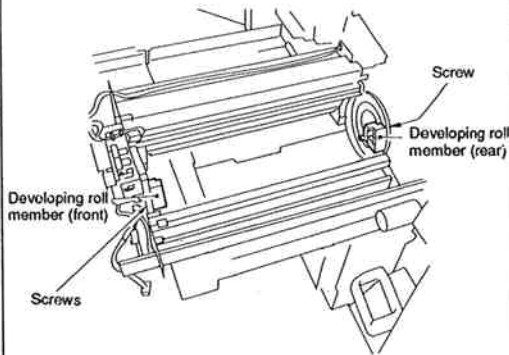
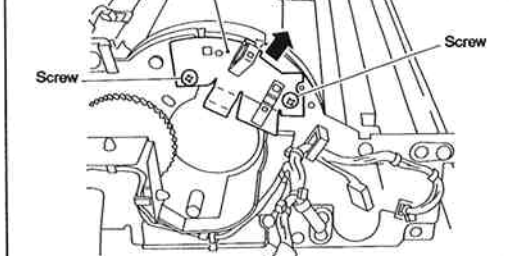
D. Attaching the Photosensitive Drum

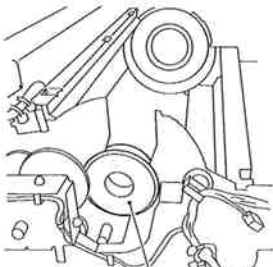
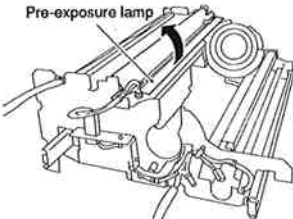
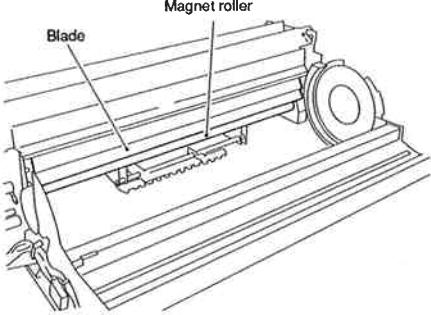
Step	Work	Checks/Remarks
1	Hold the grip of the duplexing unit, and slide it to the front until it stops; then, remove the packing material. <i>(Perform the following steps with the duplexing unit in this condition.)</i>	
2	Lift the feeder assembly, and insert a screwdriver as shown in the figure to keep the feeder assembly in place.	
3	Remove the two mounting screws, and remove the transfer/separation corona assembly metal fixing; then, detach the transfer/separation corona assembly.	
4	Remove the screwdriver used in step 2 while supporting the feeder assembly by hand; then, lower the feeder assembly.	

Step	Work	Checks/Remarks
5	Release the feeder guide release lever.	
6	Remove the three screws, and detach the process cover.	 Feeder guide release lever Process cover Duplexing unit
7	Support the polarity orientation plate of the developing assembly to prevent it from bending, and disconnect the developing bias connector; and, disconnect the connector from the toner level sensor PCB. Then, detach the two harnesses from the harness retainer.	 Polarity positioning plate Developing bias connector Connector Toner level sensor PCB
8	Remove the two screws, and detach the developing duct.	 Screw Developing duct Screw

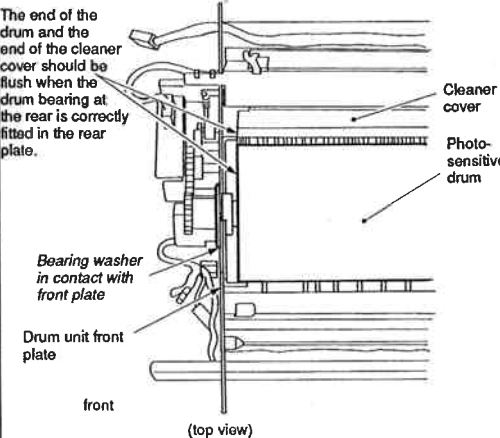
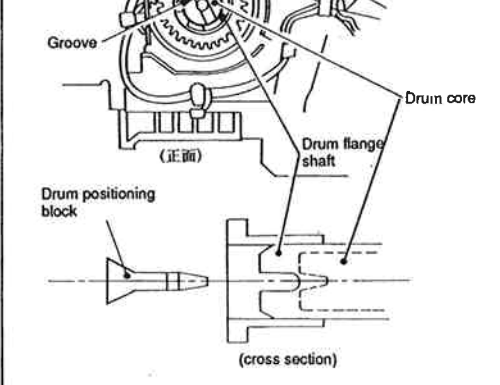
Step	Work	Checks/Remarks
9	Turn the developing assembly lock lever counterclockwise to release the assembly. Remove the screw, and remove the developing assembly metal fixing.	 The diagram shows a mechanical assembly. A curved arrow indicates the 'Developing assembly lock lever' being turned counterclockwise. A line points to a 'Screw' being removed from the 'Developing assembly metal fixing'.
10	Hold the bottom of the developing assembly, and slide it to the front to detach.	• Check that the developing cylinder is not soiled. • Take care not to damage the developing cylinder; the cylinder is not provided with a cover. • Close the shutter to prevent contamination; see the figure.  The diagram shows a 'Shutter' mechanism. An arrow labeled 'Close.' indicates the shutter is being moved to its closed position.

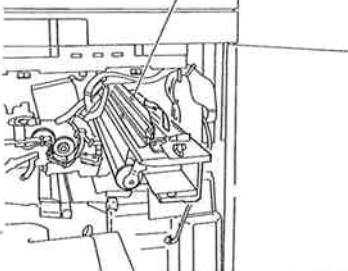
Step	Work	Checks/Remarks
11	Disconnect the two connectors.	 Connector Connector
12	Remove the screw, and disconnect the connector; then, detach the primary corona wire. Remove the screw, and disconnect the connector; then, detach the pre-transfer corona assembly. Remove the screw, and release the blank exposure unit.	• Releasing the Blank Exposure Unit.  Hook Blank exposure unit
13	Remove the screw, and detach the drum positioning block. <i>(Keep the block for later use.)</i>	 Drum positioning block

Step	Work	Checks/Remarks
14	Remove the two drum unit fixing screws, and slide out the drum unit toward the front by hooking a finger on the shaded area (figure) on the front side plate of the drum unit.	 This diagram shows the internal components of the drum unit. A line points to a 'Screw' at the top. Two lines point to 'Connector' components on the left and right sides. A shaded area is indicated on the front side plate.
15	Remove the two developing roll members (each from front and rear). (Put away the members.)	 This diagram shows two developing roll members. A line points to a 'Screw' on the right. A line points to the 'Developing roll member (rear)'. A line points to the 'Developing roll member (front)'. A line points to 'Screws' at the bottom.
16	Detach the harness from the harness retainer attached to the drum stopper.	 This diagram shows the drum stopper assembly. A line points to the 'Drum stopper'.
17	Remove the two screws, and detach the drum stopper.	 This diagram shows the drum stopper assembly from a different angle. Three lines point to 'Screw' components.

Step	Work	Checks/Remarks
18	Detach the positioning member. (<i>Put away the member.</i>)	 Positioning member
19	Release the pre-exposure lamp.	 Pre-exposure lamp
20	Place a newspaper immediately under the drum unit (above the duplexing unit upper cover). Apply toner to the cleaning blade from the magnet roller.	 Blade Magnet roller

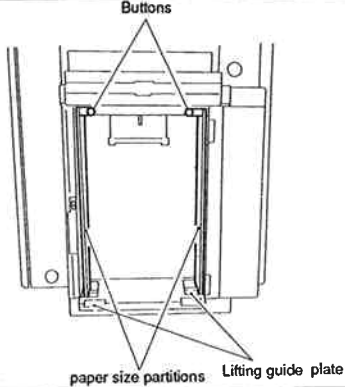
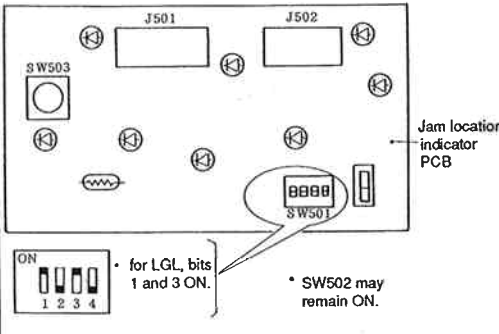
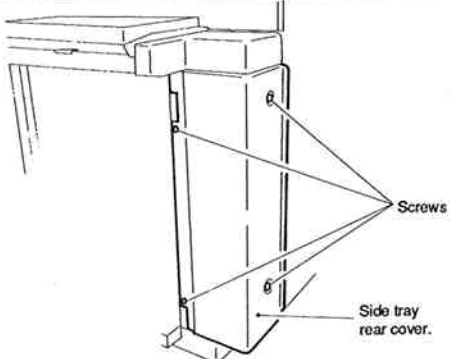
Step	Work	Checks/Remarks
21	Take out the photosensitive drum from the box, and check the drum sensitivity.	
22	Dry wipe the photosensitive drum.	Take care not to damage the photosensitive drum.
23	Set the photosensitive drum to the drum unit.	Photosensitive drum Put both sides at the same time. Push it in while lifting the rear bearing slightly. Push inside so that the shield of the bearing is in contact with the front end plate of the drum unit. Gear A Move it to the rear while turning the drum so that this gear engages with gear A.

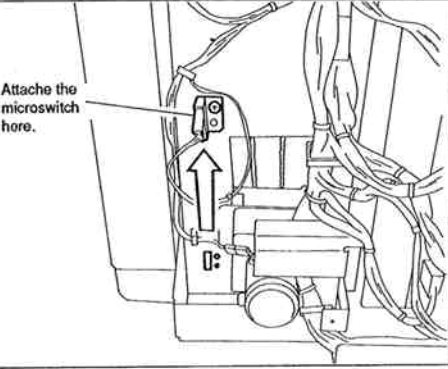
Step	Work	Checks/Remarks
		The end of the drum and the end of the cleaner cover should be flush when the drum bearing at the rear is correctly fitted in the rear plate.  Cleaner cover Photo-sensitive drum Bearing washer in contact with front plate Drum unit front plate front (top view)
24	Attach the drum stopper, and fix it in place using two screws. Then, lead the harness through the harness retainer.	
25	Put the pre-exposure lamp back to its original position, and slide the drum unit slowly into the machine.	Remove the newspaper placed on the duplexing unit.
26	Fix the drum unit using two screws; then, connect the two connectors.	
27	Turn the drum flange gear into the direction of drum rotation so that the groove of the drum flange and that of the drum core match.	
28	Attach the drum positioning block.	 Groove Groove Drum core Drum flange shaft (正面) Drum positioning block (cross section)

Step	Work	Checks/Remarks
29	Clean the feeder assembly.	
30	Clean the primary corona assembly, pre-transfer corona assembly, and transfer/separation corona assembly; then, attach them to the copier. Put the blank exposure unit back into its original position. • Make sure all connectors of the assemblies are correctly connected.	• Clean them using alcohol solution.
31	Set the duplexing unit in the copier.	
32	Attach the developing duct.	
33	Open the shutter of the developing assembly along the developing duct, and slide the developing assembly until it comes into contact with the rear.	Open the shutter. 
34	Attach the developing assembly metal fixing.	Make sure that the tip of the fixing is found at its proper position.
35	Connect the developing bias connector to the developing assembly and connect the toner level sensor connector. Then, lead the bias harness and the toner level harness through the harness retainer attached to the developing assembly.	
36	Turn the lock lever clockwise to engage the developing assembly to the photosensitive drum.	

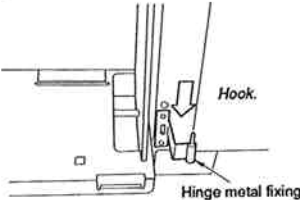
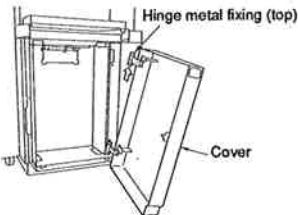
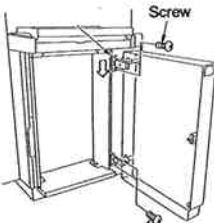
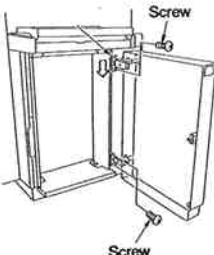
E. Changing the Size of the Side Tray

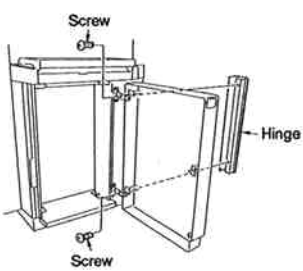
Perform the following when changing the size of the side tray to accommodate LGL size paper instead of TLR.

Step	Work	Checks/Remarks
1	Detach the lifting guide plate. Relocate the paper size partitions at the front and the rear.	 Buttons paper size partitions Lifting guide plate
2	Set the DIP switch (SW501) on the jam indicator PCB to suit the size of the copy paper.	 J501 J502 SW503 Jam location indicator PCB SW501 ON 1 2 3 4 * for LGL, bits 1 and 3 ON. * SW502 may remain ON.
3	Detach the side tray rear cover.	 Screws Side tray rear cover.

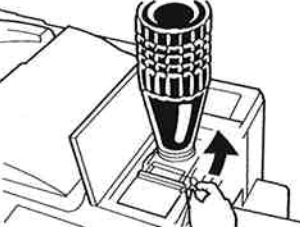
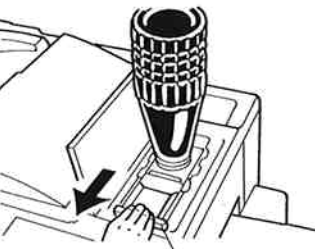
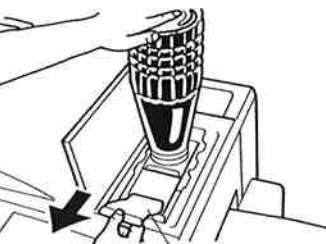
Step	Work	Checks/Remarks
4	Move the lifting plate up as far as it moves.	Store the lifting guide plate removed in Step 2 on the bottom plate of the side tray. (The lifting guide plate is not used when the paper size is designated to LGL.)
5	Change the position of the microswitch used to detect the lifter lower limit. (Take care not to trap the switch harness by the chain.)	 Attache the microswitch here.
6	Attach the side tray rear cover.	

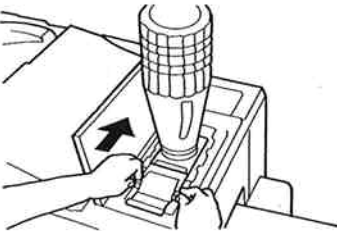
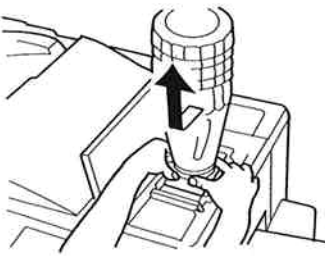
F. Attaching the Side Tray Cover

Step	Work	Checks/Remarks
1	Hook the hinge metal fixing on the hook at the bottom (side tray cover position).	
2	Fit the metal fixing hooked in step 1 into the side tray cover hinge assembly.	
3	Fit the hinge metal fixing into the top of the side tray cover hinge assembly, and hook it on the boss above the cover position.	
4	Fix the hinge metal fixings (top, bottom) using two screws.	

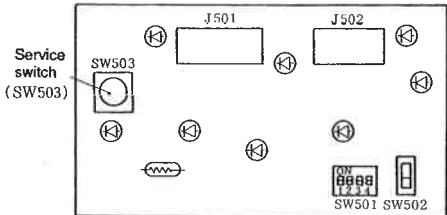
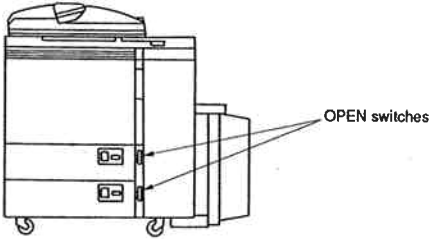
Step	Work	Checks/Remarks
5	Attach the hinge cover, and fix it in place using two screws. Attach the lifting plate 2.	
6	Close the cover.	

G. Supplying Toner

Step	Work	Checks/Remarks
1	Shake the toner bottle several times.	
2	Open the hopper cover, and fit the boss on the toner bottom into the groove of the toner supply mouth; then, slide the bottle to the rear. <i>(Make sure that the Canon logo on the toner bottle is toward the rear.)</i>	
3	Slide the lock tab attached to the side of the toner supply mouth of the hopper into the direction of the arrow to fix the toner bottle in place.	 Lock tab
4	Pull the shutter found on the front of the toner supply mouth of the hopper to the front; pull it until a click is heard, indicating that the seal stopper is unlocked.	 Shutter
5	Pull the seal stopper until the STOP mark comes into view. • Tap on the top of the bottle lightly so that all toner falls into the hopper.	 Seal stopper

Step	Work	Checks/Remarks
6	Hold both ends of the shutter, and push it to the rear until it stops. The seal stopper slides into the cap of the toner bottle.	
7	Pull the toner bottle to the front and then up to detach.	

H. Checking the Image/Operation and Setting the User Mode

Step	Work	Checks/Remarks
1	Connect the power plug to the outlet, and insert the door switch actuator into the door switch assembly on the front door.	
2	Switch the machine ON.	- Check that the LOAD PAPER message goes ON. - Press the keys on the numeric keypad and CLEAR key to make sure that the copy count is correct.
3	Press the service switch (SW503) on the jam indicator PCB.	 The diagram shows a rectangular printed circuit board (PCB) for the jam indicator. It contains several components: two large rectangular components labeled J501 and J502 at the top; a circular component labeled SW503 on the left, with a label 'Service switch (SW503)' pointing to it; a small rectangular component labeled SW501 SW502 at the bottom right; and several other smaller circular and rectangular components scattered across the board.
4	Select 'DRUM_SEL' in the service mode (*3). Enter the drum sensitivity, and press the OK key. (The sensitivity setting is indicated on the label attached behind the front door.)	
5	Press the OPEN switch of the top and bottom holders, and slide out the trays to the front. Remove the packing material from the tray.	 The diagram shows a side view of the machine. Two arrows point to the front of the top and bottom paper trays, which are labeled 'OPEN switches'.
6	Arrange the paper size guide plate on the tray as necessary.	
7	Put copy paper in the tray.	

Step	Work	Checks/Remarks
8	Slide the tray into the copier.	
9	Stack copy paper in the side tray, and close the cover.	
10	Attach the copy tray to the copier.	
11	Wait until WAIT is over; then, select 'TONER_S' in the service mode (*4*). Press the OK key to execute the toner supply mode.	• Keep the front door closed as much as possible to prevent light from moving inside the copier. • The mode is executed for 10 min max. to supply toner from the hopper to the developing assembly. • Do NOT switch the machine OFF while it is operating.
12	Place the Test Sheet on the copyboard, and make copies. <i>Toner may drop from the drum separation claw and soil the first ten or so copies; the problem, however, will not last.</i>	• Make sure that there is no abnormal sound. • Check copies produced at each fixed reproduction ratio. • Make sure that copies are made in specified numbers. • Adjust the height of the primary corona wire if the density is different between left and right.
13	Stack copy paper in the multifeeder, and make copies using the multifeeder.	• Make sure copying operation is normal.
14	Make two-sided and overlay copies.	• Make sure that there is no abnormal noise. • Make sure that paper is fed properly into and from the duplexing unit.
15	Enter settings for the standard mode to suit the needs of the user using the service mode (*5*).	For the service mode (*5*), see P. 3-177.
16	Enter the service mode (*1*), and check 'WIRE'. • If '0', press the RESET key twice to leave the service mode. • If not '0', press the RESET key twice to leave the service mode and, then, press *, 9, and then OK to execute wire cleaning. When the cleaning is over, go to the next step.	
17	Remove the door switch actuator, and slide out the duplexing unit; then, release the feeder guide release lever, and attach the process cover. Slide in the duplexing unit, and close the front door.	• Install the, sorter, or other options after this step; see the respective INSTALLATION PROCEDURE for instructions.
18	Clean around the copier.	

Step	Work	Check/Remarks
19	Move the copier to the site of installation, and fix it in place by turning the caster stop.	
20	Fill out the Service Sheet.	

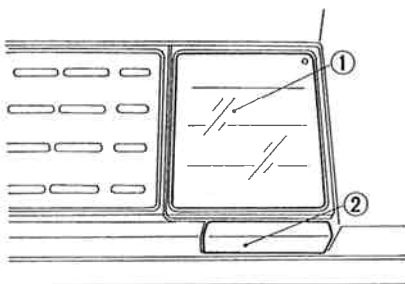
III. RELOCATING THE MACHINE

If the copier must be relocated by truck or other means of transportation, go through the following steps.

Step	Work	Checks/Remarks
1	Make a copy in DIRECT.	
2	Remove all copy paper from the front/side tray.	
3	Switch the machine OFF, and disconnect the power plug from the outlet. Fix the lens using the metal fixing.	Make sure that the lens will not move.
4	Detach the left cover, and fix the No. 1 mirror mount using the lock plate.	Make sure that the No. 1 mirror mount will not move.
5	Attach the left cover.	
6	Detach the photosensitive drum.	Put the photosensitive drum in a separate box.
7	Fix the drum unit using screws, and set each corona assembly, developing assembly, and duplexing unit.	
8	Tape the transfer corona assembly, vertical feeder assembly release lever, developing assembly release lever, and duplexing unit to protect against vibration.	
9	Tape the front doors, delivery assembly cover, hopper cover, upper/lower front tray, and side tray cover.	
10	Place a sheet of A3 copy paper on the copyboard glass, and tape the copyboard cover.	

IV. ATTACHING CONTROL CARD V

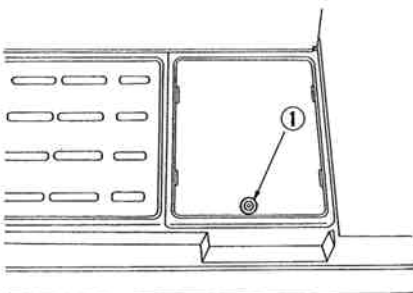
- 1) Detach the front right cover.
- 2) Detach the left cover.
- 3) Detach the upper front cover.
- 4) Detach the control panel.
- 5) Detach the blanking plate from the control card slit.
- 6) Detach the transparent MEMO sheet.



- ① Transparent MEMO sheet
- ② Blanking plate

Figure 5-6

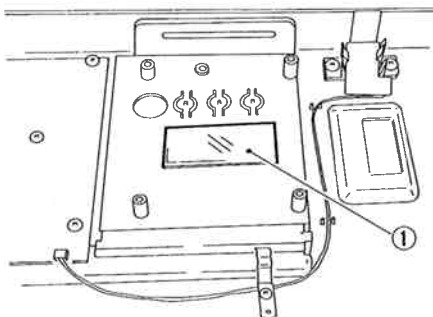
- 7) Remove the screw from the blanking cover.



- ① Screw

Figure 5-7

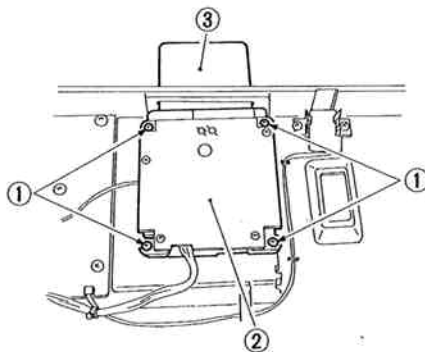
- 8) Turn over the control panel.
- 9) Place the transparent sheet over the hole of the display.



- ① Transparent sheet

Figure 5-8

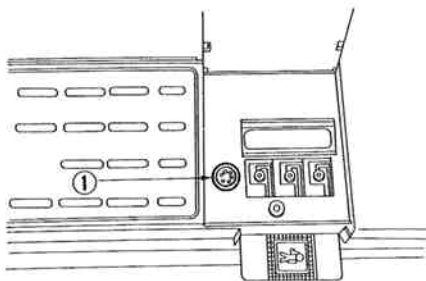
- 10) Detach the protection sheet from the display of Control Card V.
- 11) Fix Control Card V to the control panel using four mounting screws. Slide a card in and out of Control Card V; fix Control Card V at a point where the card may be slid in and out smoothly.



- ① Screws
- ② Control Card V
- ③ Card

Figure 5-9

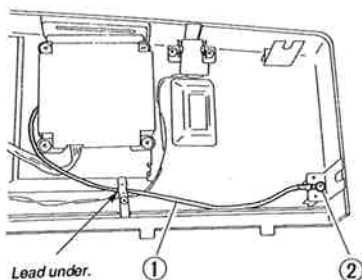
Check that the connector for the printer is centered over the hole.



① Connector

Figure 5-10

12) Fix the grounding wire of Control Card V as shown.

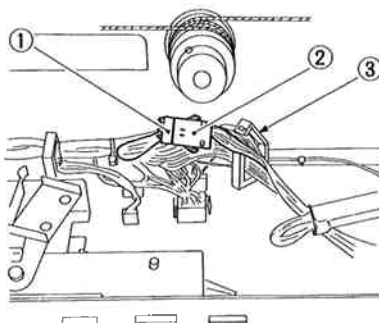


① Grounding wire
② Screw

Figure 5-11

13) Disconnect the shorting connector shown in Figure 5-12.

14) Connect the 4P connector of Control Card V and the 4P connector of the copier.



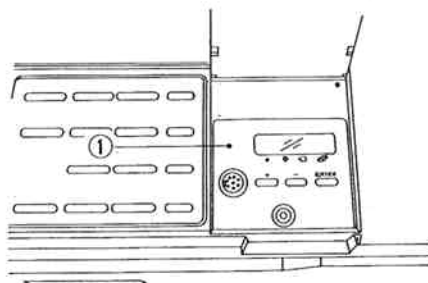
① Shorting connector
② 4P connector (copier)
③ Harness retainer

Figure 5-12

Be sure to lead the harness through the harness retainer to prevent contact with the scanner drive pulley.

15) Peel the protective sheet from the operation guide of Control Card V.

16) Attach the operation guide of Control Card V on the copier.



① Operation guide

Figure 5-13

17) Attach the control panel on the copier.

18) Attach the MEMO sheet and the transparent sheet.

19) Switch the copier ON, and check the operation of Control Card V.

CHAPTER 6

MAINTENANCE AND SERVICING

I. PERIODICALLY REPLACED PARTS	6-1	III. SCHEDULED SERVICING CHART	6-5
II. DURABLES	6-2	IV. SCHEDULED SERVICING PARTS	6-7

I. PERIODICALLY REPLACED PARTS

Some parts of the copier need to be replaced on a periodical basis; those listed below must be replaced regardless of damage or wear, since they affect the very operation of the machine when they fail. Replace each part during the scheduled visit closest to the life indicated.

as of end of DEC., 1992

No.	Parts Name	Parts No.	Q'ty	Life (copies)	Remarks
1	Pre-transfer/Transfer/ Separation corona wire	FY3-0030-000	AR	250,000	100V
		FY3-0040-000	AR	250,000	115/230V
2	Primary corona wire	FY1-0275-000	AR	250,000	

Note:

The above values are estimates only and subject to change based on field data.

II. DURABLES

Those parts classified as *durables* may require replacement once or more during the period of machine warranty. They need not be replaced unless wear or damage is noted; consult the tables for guidance.

A. Copier

as of end of DEC., 1992

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	Scanning lamp	FH7-3215-000	1	250,000	110/115V
		FH7-3216-000	1	250,000	220/240V
2	Cleaner separation claw	FA3-1937-000	2	250,000	
3	Fixing assembly cleaning belt	FA5-3720-000	1	250,000	
4	Upper tray pick-up/feeder roller	FA6-8089-000	2	250,000	
5	Upper tray separation roller	FA6-8090-000	2	250,000	
6	Upper tray pick-up feeder roller	FA6-8089-000	2	250,000	
7	Lower tray separation roller	FA6-8090-000	2	250,000	
8	Side tray pick-up feeder roller	FA6-8081-000	2	250,000	
9	Side tray separation roller	FA6-8090-000	2	250,000	
10	Multifeeder pick-up/feeder roller	FA6-7727-000	1	250,000	
11	Multifeeder separation roller	FA3-8733-000	1	250,000	
12	Re-feeder assembly pick-up roller	FA6-8089-000	2	250,000	
13	Re-feeder assembly separation roller	FA6-8090-000	2	250,000	
14	Upper fixing roller	FA6-7987-000	1	500,000	
15	Sub feeder roller (holding tray)	FF1-6249-020	2	250,000	
16	Oil pad (fixing assembly)	FC1-5570-000	1	500,000	
17	Upper tray pick-up roller	FA6-7777-000	2	500,000	
18	Lower tray pick-up roller	FA6-7777-000	2	500,000	
19	Side tray pick-up roller	FA6-8089-000	2	500,000	

No.	Parts name	Parts No.	Q'ty	Life (copies)	
20	Multifeeder pick-up roller	FA5-2854-000	2	500,000	
21	Pre-transfer corona assembly scraper	FA4-1867-000	1	500,000	
22	Primary corona assembly wire cleaner	FF2-3551-000	1	500,000	
		FF2-3552-000	1	500,000	
23	Transfer/Separation corona wire cleaner	FF2-4755-000	1	500,000	
24	Lower fixing roller	FC1-2026-000	1	500,000	
25	Thermistor	FH7-7252-000	1	500,000	
26	Delivery upper separation claw	FC1-0391-000	4	500,000	
27	Insulating bush (front)	FA3-2668-020	1	500,000	
28	Insulating bush (rear)	FA4-0627-000	1	500,000	
29	Developing cylinder	FA6-7811-000	1	1,000,000	
30	Developing assembly roll	FA5-3770-000	2	1,000,000	
31	Developing assembly side seal (front)	FA5-4252-000	1	1,000,000	
32	Developing assembly side seal (rear)	FA5-4251-000	1	1,000,000	
33	Cleaning blade (drum cleaning assembly)	FA4-1827-000	1	1,000,000	Use both edges; 500,000 copies per edge.\
34	Primary corona assembly	FG2-1984-040	1	1,000,000	
35	Transfer/Separation corona assembly	FG2-2004-000	1	1,000,000	
36	Pre-transfer corona assembly	FG2-1985-020	1	1,000,000	
37	Delivery lower separation claw	FA2-8345-000	4	1,000,000	
38	Fixing assembly thermoswitch	FH7-7154-000	1	1,000,000	
39	Fixing roller blade	FA5-8753-000	1	1,000,000	Use both edges; 500,000 copies per edge.\
40	Fixing oil (S-250)	FG2-2099-000	1	250,000	40g

Note:

The values above are estimates only and subject to change based on the field data.

B. C.F.F.

as of end of DEC., 1992

No.	Parts name	Parts No.	Q'ty	Life (copies)	Remarks
1	C.F.F. lamp	FH7-3226-000	1	250,000	110/115V
		FH7-3227-000	1	250,000	230V

Note:

The values above are estimates only and subject to change based on the field data.

III. SCHEDULED SERVICING CHART

Note:

- i. Carry out scheduled servicing every 250,000 copies.
- ii. Check the Service Record before each visit, and take parts if replacement is expected.

Step	Work	Checks	Remarks
1	Meet the person in charge of the machine.	Check the general condition of the machine.	
2	Take notes of the counter reading.	Check faulty copies.	
3	Make test copies.	Check the following: a. Image density b. White background (soiling) c. Characters (clarity) d. Leading edge margin e. Fixing, registration, and back (soiling) f. Abnormal noise g. Counter operation	standards: 4.0 +1.5, -1.0 mm (DIRECT)
4	Clean the following: • Corona wire • Grid wire • Shield plate • Roller electrode		Dry wipe them using lint-free paper; then, use alcohol.
5	Clean the optical assembly. • Reflector plate (for document exposure) • Side reflector plate (for document exposure) • Lens • No. 1, 2, 3, and 4 mirrors • Dust-proofing glass • Pre-exposure lamp plastic sheet • Standard white plate		Use a blower brush; if the dirt cannot be removed, use alcohol. Clean it using a moist cloth. Dry wipe it.
6	Check the collection of waste toner.	If the waste toner receptacle is more than half full, dispose of the toner in a plastic bag.	
7	Clean the transfer guide: • Transfer guide plate (upper, lower) • Transfer/Separation corona assembly guide rail		Detach the photosensitive drum.

Step	Work	Checks	Remarks
8	Check and, if necessary, clean the cleaning assembly. • Magnet roller (check) • Separation claw (clean)	If the coating of toner on the magnet roller is uneven, • Rotate the magnet roller in reverse to remove dust and paper lint.	Detach the photosensitive drum from the drum unit.
9	Clean the separation/cleaning assembly • Feeder belt		After cleaning, attach the photosensitive drum.
10	Clean the fixing/delivery assembly. • Guide • Separation claw (upper, lower) • Cleaning belt (check) • Fixing assembly oil (apply; S-250)		
11	Carry out scheduled servicing (p. 6-7) according to the number of copies made.		
12	Clean the copyboard glass.		Use alcohol solution.
13	Make test copies.		
14	Make sample copies.		
15	Organize sample copies, and clean up the site.		
16	Record the final counter reading.		
17	Fill out the Service Sheet, and report to the person in charge.		

IV. SCHEDULED SERVICING PARTS

A. Copier

Note:

Do not use oils or solvents other than those specified.

△: Clean ●: Replace ×: Oil □: Adjust ◎: Check

Location	Parts	upon installation	every 250,000 copies	every 500,000 copies	Remarks
External assembly	Ozone filter		△		
	Dustproof filter		△		
Scanner drive assembly	Scanner cable		◎ □		check and adjust at time of first 250,000 copies.
	Scanner rail		△/×		apply lubricant.
Optical assembly	No. 1 through No. 4 mirrors		△		
	Dustproof glass		△		
	Reflector plate (for document exposure)		△		
	Standard white plate		△		
Corona assembly	Corona wire (primary, pre-transfer, transfer, separation)	△	●		
	Grid (primary)	△	△		
	Corona assembly shield plate	△	△		
	Roller electrode (waste toner)			△	
Photosensitive drum	Photosensitive drum	△		△	dry wipe it upon installation; use alcohol every 500,000 copies.
Developing assembly	Developing cylinder	△			wipe condensation, and remove residual toner.
	Developing assembly roller		△		
Cleaning assembly	Blade	□			upon installation or replacement (edge), apply toner; 500,000 per edge.
Fixing assembly	Inlet guide plate		△		
	Cleaning belt	◎	◎		upon installation, take it up.
	Thermistor		△		
Fixing assembly	Oil felt	×	×		Use alcohol.
	Fixing roller blade		△		
Delivery assembly	Separation claw (upper, lower)		△		
Waste toner	Waste toner		◎		dispose of it.

Location	Parts	upon installation	every 250,000 copies	every 500,000 copies	Remarks
Others (around drum)	Pre-exposure assembly scoop-up sheet		△		
	Blank exposure assembly scoop-up sheet		△		
Feeding assembly	Re-feed outlet guide plate Feeder roller Re-feed roller Registration roller (upper, lower) Side tray feeder roller Front tray upper feeder roller Front tray lower feeder roller Vertical path upper/lower roller Multifeeder feeder roller Reversal roller Switch-back roller		△		Use alcohol.

B. C. F. F.

△: Clean ●: Replace ×: Oil □: Adjust ◎: Check

Item	Installation	minimum interval for copier	Remarks
Platen glass		△	Figure 6-1, ②
White plate		△	Figure 6-1, ①
Paper sensor		△	
Dustproof glass		△	Figure 6-1, ③
CFF mirror		△	Figure 6-1, ④
Optional shutter side		△	Figure 6-1, ⑤

Note:

Use the copier counter reading as guide, and carry out the work as needed.

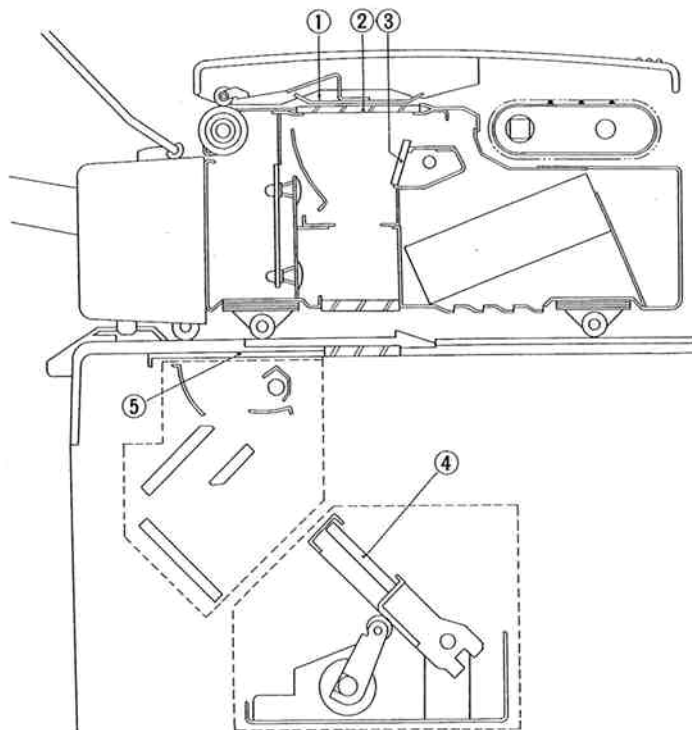


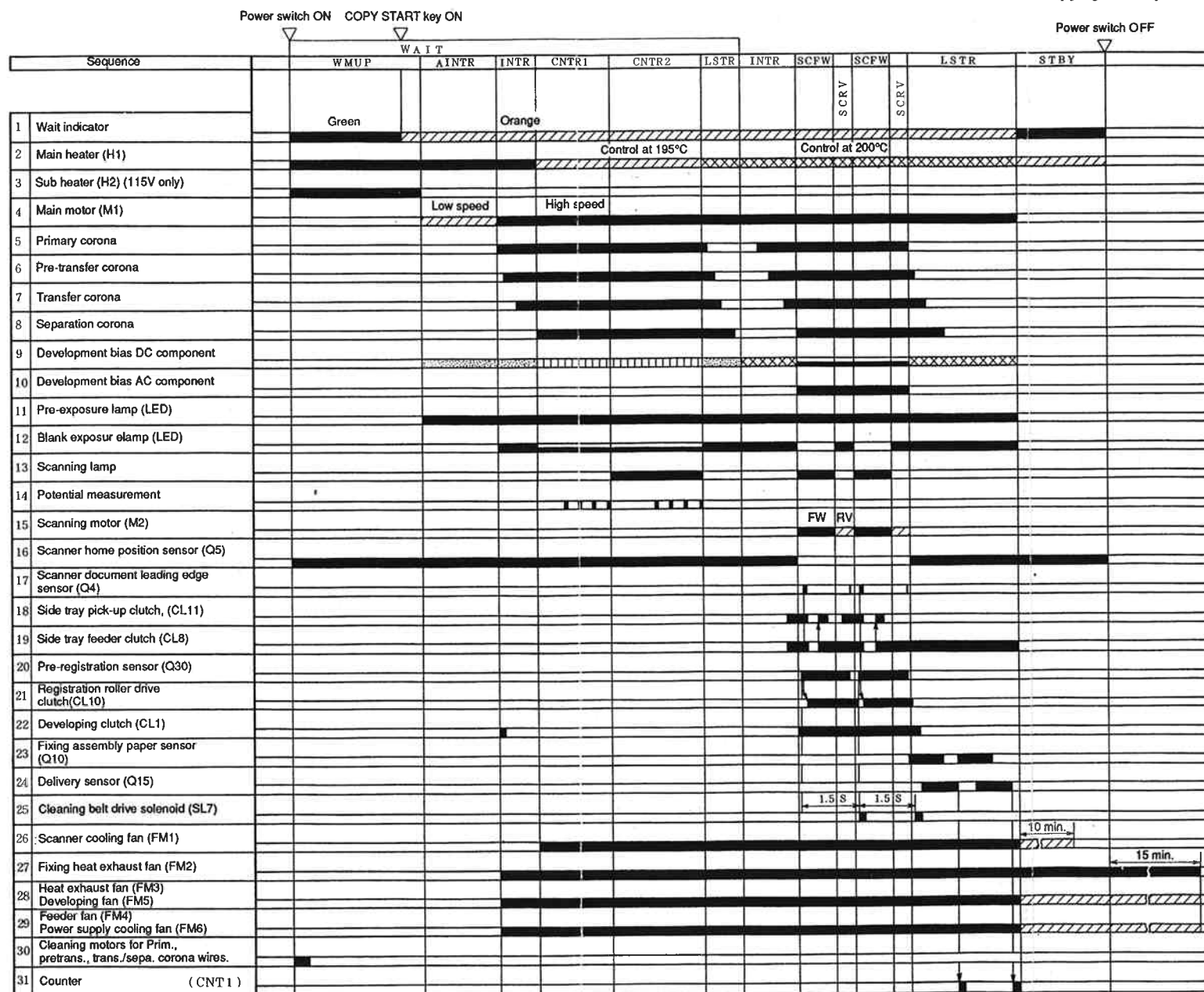
Figure 6-1

APPENDIX

A. GENERAL TIMING CHART	A-1	J. TONER LEVEL SENSOR	A-52
B. LIST OF SIGNALS/COMMANDS	A-3	K. JAM INDICATOR	A-53
C. GENERAL CIRCUIT DIAGRAM	A-5	L. DRUM HEATER CONTROL	A-55
E. DC CONTROLLER	A-7	M. CONTROL PANEL	A-57
F. POTENTIAL MEASURING CIRCUIT DIAGRAM	A-47	N. C.F.F. GENERAL CIRCUIT DIAGRAM	A-61
G. HVT2	A-49	O. C.F.F. CONTROLLER	A-62
H. HVACC	A-50	P. LIST OF SPECIAL TOOLS	A-63
I. HVTAC	A-51	Q. SOLVENT/OIL TABLE	A-64

A. GENERAL TIMING CHART

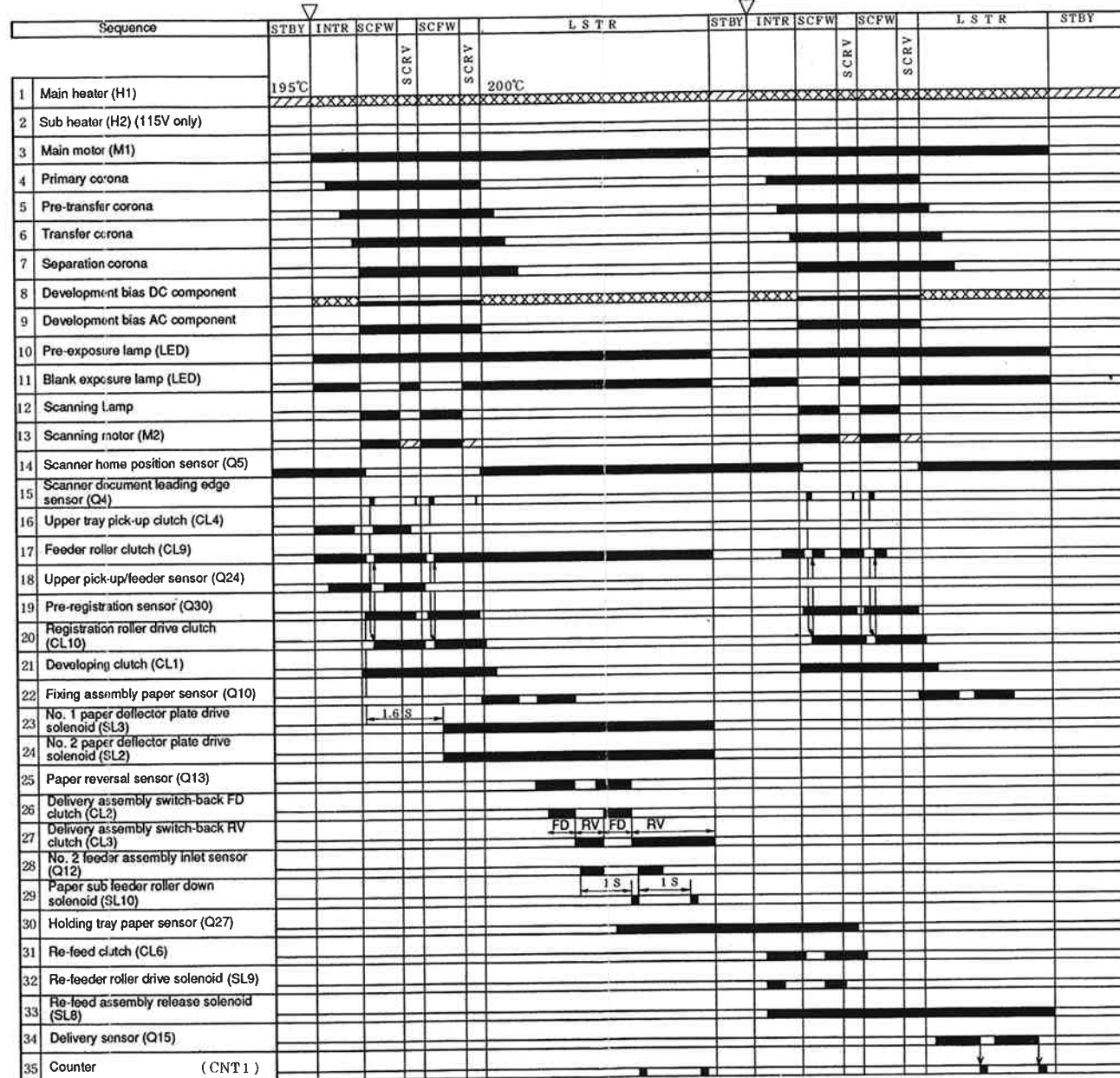
Two copying, Pick-Up from Side Tray, Automatic Start



Two-Side Copy, Pick-Up from Upper Front Tray

COPY START key ON (1st side)

COPY START key ON (2nd side)



B. LIST OF SIGNALS/COMMANDS

SIGNALS AND COMMANDS

ACBTP ACBIAS TIMING PULSE
 ACON AC TRANSFORMER DRIVE command
 CBOP CLEANING BELT OUT PRECAUTION signal
 CBOUT CLEANING BELT OUT signal
 CCNNT CONTROL CARD DETECT signal
 CCNTD CONTROL CARD DRIVE command
 CFFST C.F.F. SET signal
 CFLE COMPUTER FORM LEADING EDGE signal
 CLBSD CLEANING BELT SOLENOID DRIVE command
 CLKP CLOCK PULSE signal
 COSET COVER STET signal
 (DCBC) DC BIAS CONTROL signal
 DFWO DOCUMENT FORWARD command
 DHRD DRUM HEATER DRIVE command
 DOTD DOCUMENT TOP DETECT signal
 DOSET DOCUMENT SET signal
 DOWD DOCUMENT WIDTH DETECT signal
 DPISD DOCUMENT FORWARD command
 DPSO PAPER SUB FEED ROLLER LOWERING SOLENOID DRIVE COMMAND
 DPSSD DUPLEXING PAPER STOPPER RELEASE SOLENOID DRIVE command
 DUPCD DUPLEXING PICK-UP ROLLER CLUTCH DRIVE command
 DSD1 DEFLECTOR SOLENOID DRIVE command 1
 DSD2 DEFLECTOR SOLENOID DRIVE command 2
 DSOF DOOR OPEN signal
 DRVS DOCUMENT REVERSE command
 FEDCD FEED CLUTCH DRIVE command
 FMD FAN MOTOR DRIVE command
 FMDH FAN MOTOR DRIVE command
 FMDH FAN MOTOR HIGH SPEED DRIVE command
 FMDL FAN MOTOR LOW SPEED DRIVE command
 FM1A FAN MOTOR 1 ACTIVE signal
 FM2A FAN MOTOR 2 ACTIVE signal
 FM1DH FAN MOTOR 1 HIGH SPEED DRIVE command
 FM2DL FAN MOTOR 1 LOW SPEED DRIVE command
 FIXDSO FIXOMG ASS'Y LOCK STOP SOLENOID DRIVE command
 FIXLK FIXOMG ASS'Y LOCK SOLENOID DRIVE command
 HMD HOPPER MOTOR DRIVE command
 HPSET C.F.F. HOME POSITION SET signal
 HRA HEATER ACTIVE signal
 (HVPCT) PRE-TRANSFER CORONA CURRENT CONTROL signal
 (HVSCT) SEPARATION CORONA CURRENT CONTROL signal
 (HVTCT) TRANSFER CORONA CURRENT CONTROL signal
 (HVTPC) PRIMARY CORONA CURRENT CONTROL signal
 LAA LAMP ACTIVE signal
 LASEL LAMP SELECTION signal
 LEDO7 LED DRIVE command
 LDSO L SIZE DEFLECTOR SOLENOID DRIVE command
 LFLM LIFTER LWOER LIMIT DETECT signal
 (LINT) LIGHT INTENSITY CONTROL signal
 LLTP LOWER LIFTER POSITION signal
 LPRSD LOWER TRAY PICK-UP DRIVE command
 LPUCD LOWER TRAY PICK-UP CLUTCH DRIVE command
 LRD LAMP REGULATOR DRIVE command
 LTOP LWOER TRAY OPEN signal
 LTLD LOWER TRAY OPEN LED DRIVE command
 LTLL LOWER TRAY LIFTER LWOER DETECT signal
 LTLU LOWER TRAY LIFTER UPPER DETECT signal
 LTP TRAY GUID HOME POSITION DETECT signal
 LTPE LOWER TRAY PAPER ENTRY signal
 LTRSD LOWER TRAY RELEASE SOLENOID DRIVE command
 LTRYO LOWER TRAY OPEN DETECT signal
 LXHP LENS X HOME POSITION signal
 LYHP LENS Y HOME POSITION signal
 MCLK C.F.F. MOTOR CLOCK PULSE signal

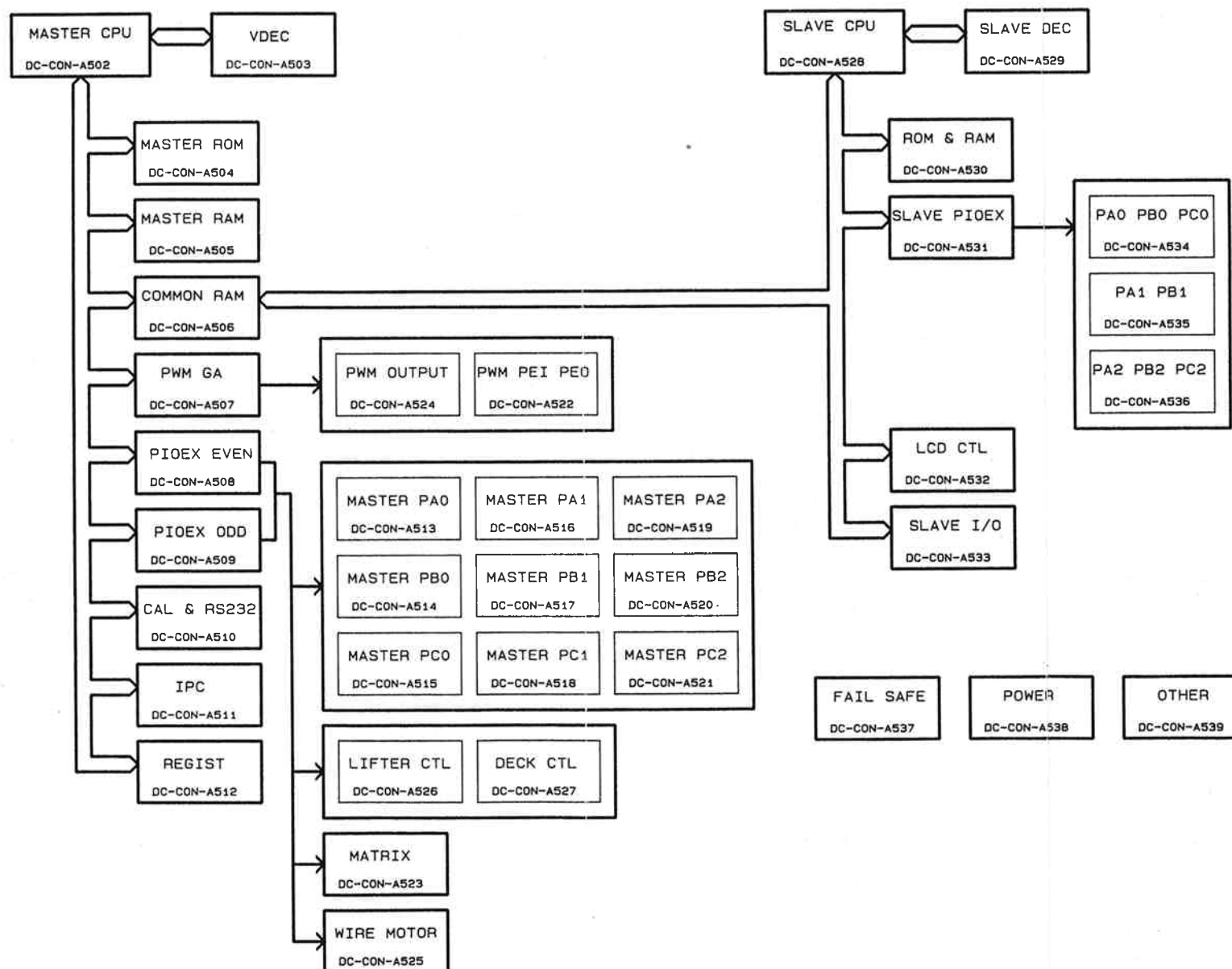
MDSD M SIZE DEFLECTOR SOLENOID DRIVE command
 MFO MULTIFEEDER OPEN DETECT signal
 MFPCD MULTIFEEDER PICK-UP CLUTCH DRIVE command
 MFPSD MULTIFEEDER PICK-UP ROLLER ENGAGEMENT SOLENOID DRIVE command
 MFS MULTIFEEDER PAPER DETECT signal
 MHP MIRROR HOME POSITION signal
 MHRD MAIN HEATER DRIVE command
 MMD MAIN MOTOR DRIVE command
 MMSC MAIN MOTOR SPEED CONTROL signal
 (MPSZ) MULTIFEEDER PAPER WIDTH signal
 PCHP PRIMARY CORONA WIRE CLEANER HOME POSITION signal
 PCRP PRIMARY CORONA WIRE CLEANER REAR POSITION signal
 PDP1 FIXING SEPARATION CLAW PAPER DETECT signal
 PDP2 FIXING ASS'Y PAPER DETECT signal
 PDP3 PAPER REVERSAL INLET signal
 PDP4 NO.2 FEEDER INLET PAPER DETECT signal
 PDP5 PAPER REVERSAL signal
 PDP6 PAPER REVERSAL OUTLET signal
 PDP7 DELIVERY PAPER DETECT signal
 PDP8 NO.2 FEEDER OUTLET signal
 PDP9 LOWER TRAY PICK-UP/FEED PAPER DETECT signal
 PDP10 UPPER TRAY PICK-UP/FEED PAPER DETECT signal
 PDP11 NO.2 PICK-UP PAPER DETECT signal
 PDP12 HOLDING TRAY PAPER DETECT signal
 PDP13 PRE-REGISTRATION PAPER DETECT signal
 PDP14 PRE-PICK-UP/FEED PAPER DETECT signal
 PEXP PRE EXPOSURE LED DRIVE command
 (POT) SURFACE POTENTIAL signal
 PRSD SIDE TRAY PICK-UP ROLLER RELEASE SOLENOID DRIVE command
 PSZ0 PAPER SIZE DETECT signal 0
 PSZ1 PAPER SIZE DETECT signal
 PSZ2 PAPER SIZE DETECT signal 2
 PSZ3 PAPER SIZE DETECT signal 3
 PWOFF POWER OFF signal
 QCHP PRE-TRANSFER CORONA WIRE CLEANER HOME POSITION signal
 QCRP PRE-TRANSFER CORONA WIRE CLEANER REAR POSITION SIGNAL
 RGCD REGISTRATION ROLLER CLUTCH DRIVE command
 ROED ROLLER ELECTRODE BIAS DRIVE command
 SBFCD SWITCH-BACK CW CLUTCH DRIVE command
 SBRCD SWITCH-BACK CCW CLUTCH DRIVE command
 SCDP SCANNER DOCUMENT LEADING EDGE signal
 SCFFP SCANNER C.F.F. POSITION signal
 SCHP SCANNER HOME POSITION signal
 SCNTD SMALL COUNTER DRIVE command
 SDOO S SIZE DEFLECTOR SOLENOID DRIVE command
 SHRD SUB HEATER DRIVE command
 STDO SIDE TRAY DOOR OPEN signal
 STFCD SIDE TRAY FEED ROLLER CLUTCH DRIVE command
 STPCD SIDE TRAY PICK-UP ROLLER CLUTCH DRIVE command
 STPE SIDE TRAY PAPER ENPTY signal
 TCNTD TOTAL COUNTER DRIVE command
 TEP TONER ENPTY signal
 TH1 THERMISTOR signal 1
 TH2 THERMISTOR signal 2
 THP TONER SUPPLY signal
 TSCHP TRANSFER/SEPARATION CORONA WIRE CLEANER HOME POSITION signal
 TSCRp TRANSFER/SEPARATION CORONA WIRE CLEANER REAR POSITION signal
 ULTP UPPER TRAY LIFTER POSITION signal
 UPPSD UPPER TRAY PICK-UP ROLLER RELEASE SOLENOID DRIVE command
 UPUCD UPPER TRAY PICK-UP ROLLER PRELEASE SOLENOID DRIVE command
 UTLD UPPER TRAY OPEN LED DRIVE command
 UTLL UPPER TRAY LIFTER LWOER DETECT signal
 UTLU UPPER TRAY LIFTER UPPER DETECT signal
 UTOP UPPER TRAY OPEN signal

UTPE UPPER TRAY PAPER ENPTY signal
 UTRSD UPPER TRAY RELEASE SOLENOID DRIVE command
 UTRYO UPPER TRAY OPEN DETECT signal
 WTLF WASTE TONER FEEDSCREW LOCK DETECT signal

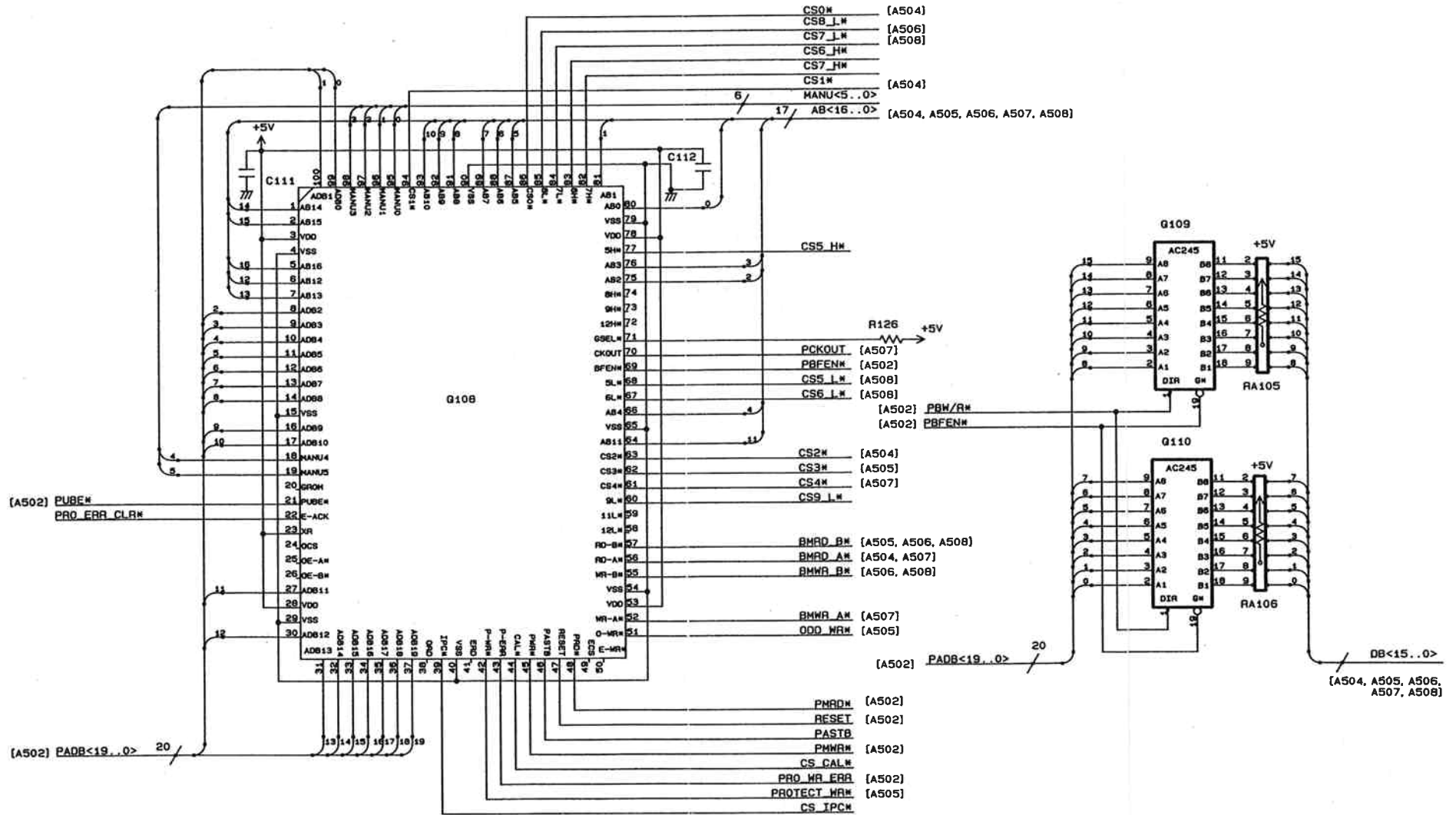
LIST OF ABBREVIATIONS

AER AE (MEASUREMENT) ROTATION
 AINTR ADDITIONAL INITIAL ROTATION
 CNTR CONTROL ROTATION
 INTR INITIAL ROTATION
 LSTR LAST ROTATION
 PFR PEPPER FEED ROTATION
 SCFW SCANNER FORWARD
 SCRV SCANNER REVERSE
 STBY STANDBY
 WAIT WAIT
 WMUP WARM UP
 WMUPR WARM UP ROTATION

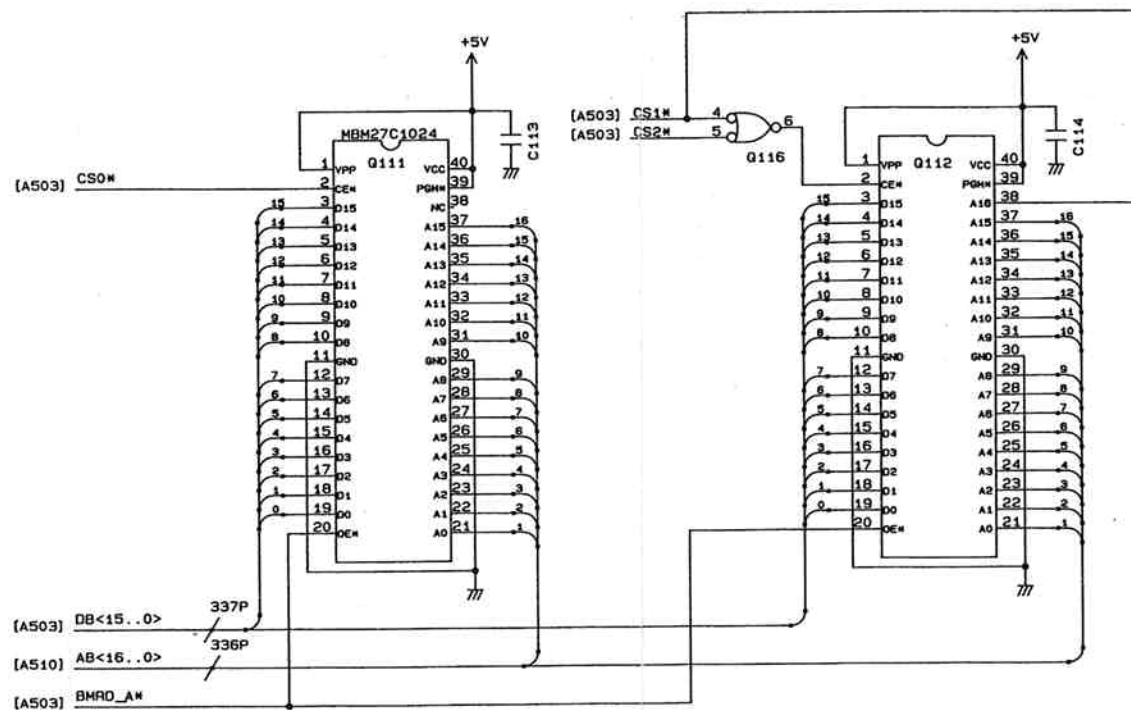


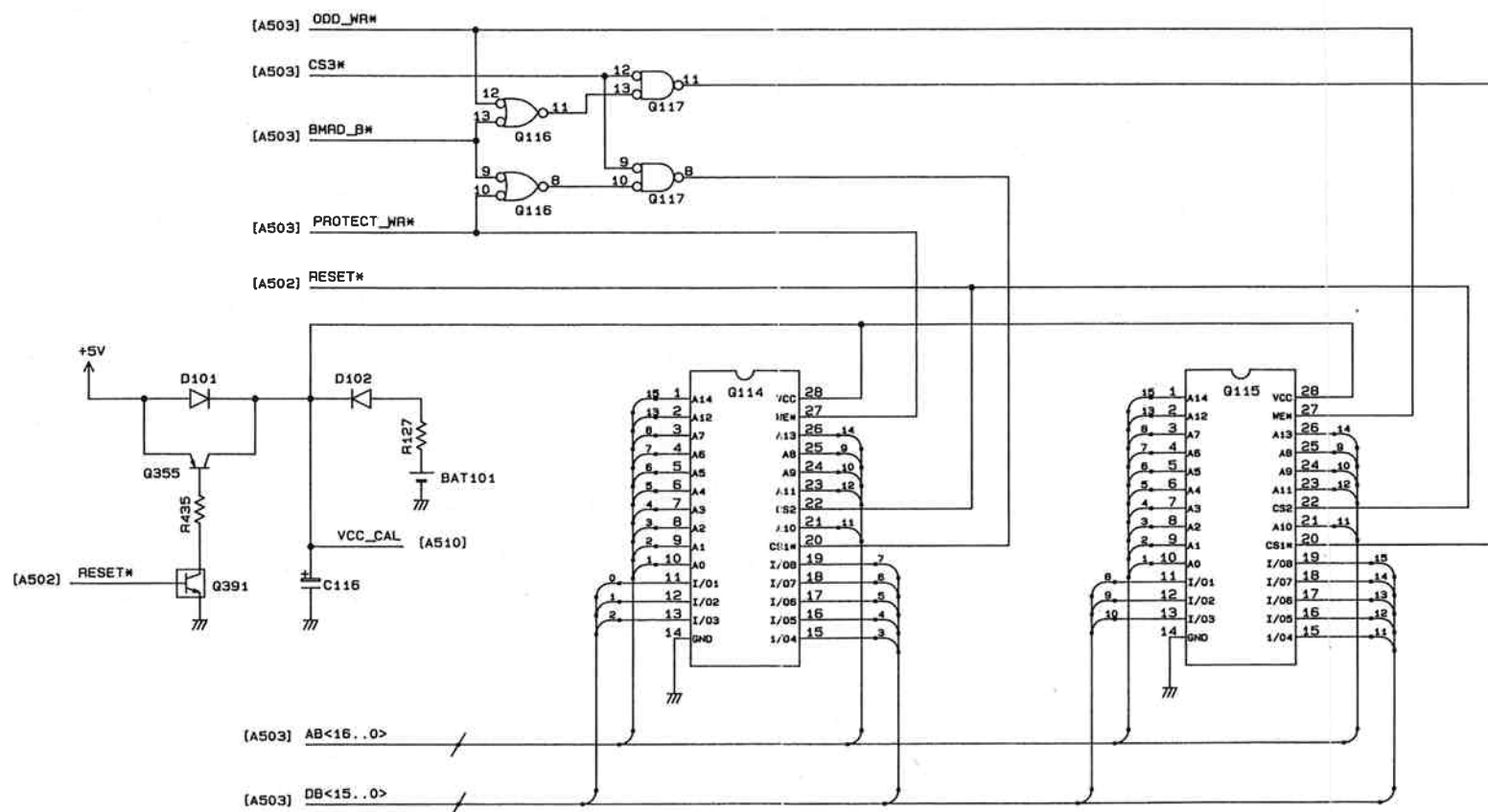




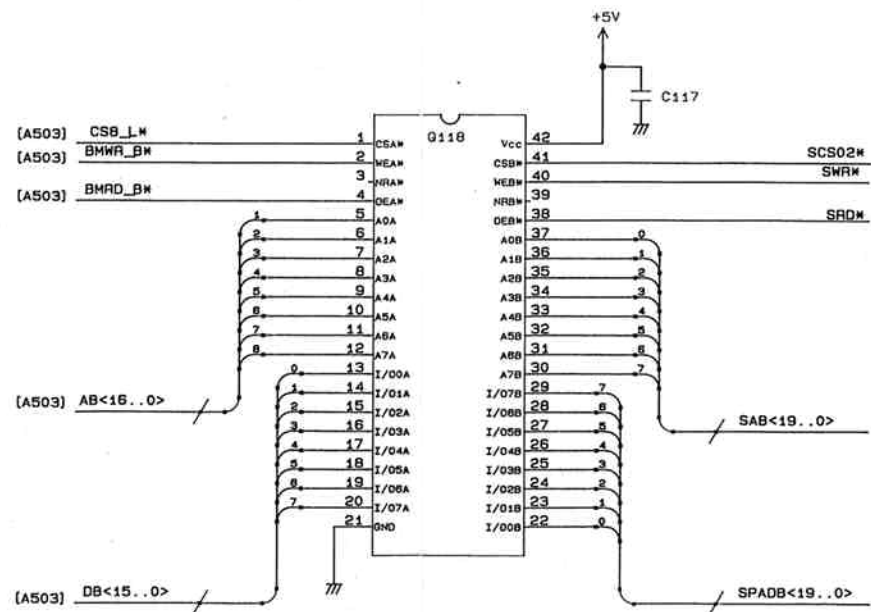


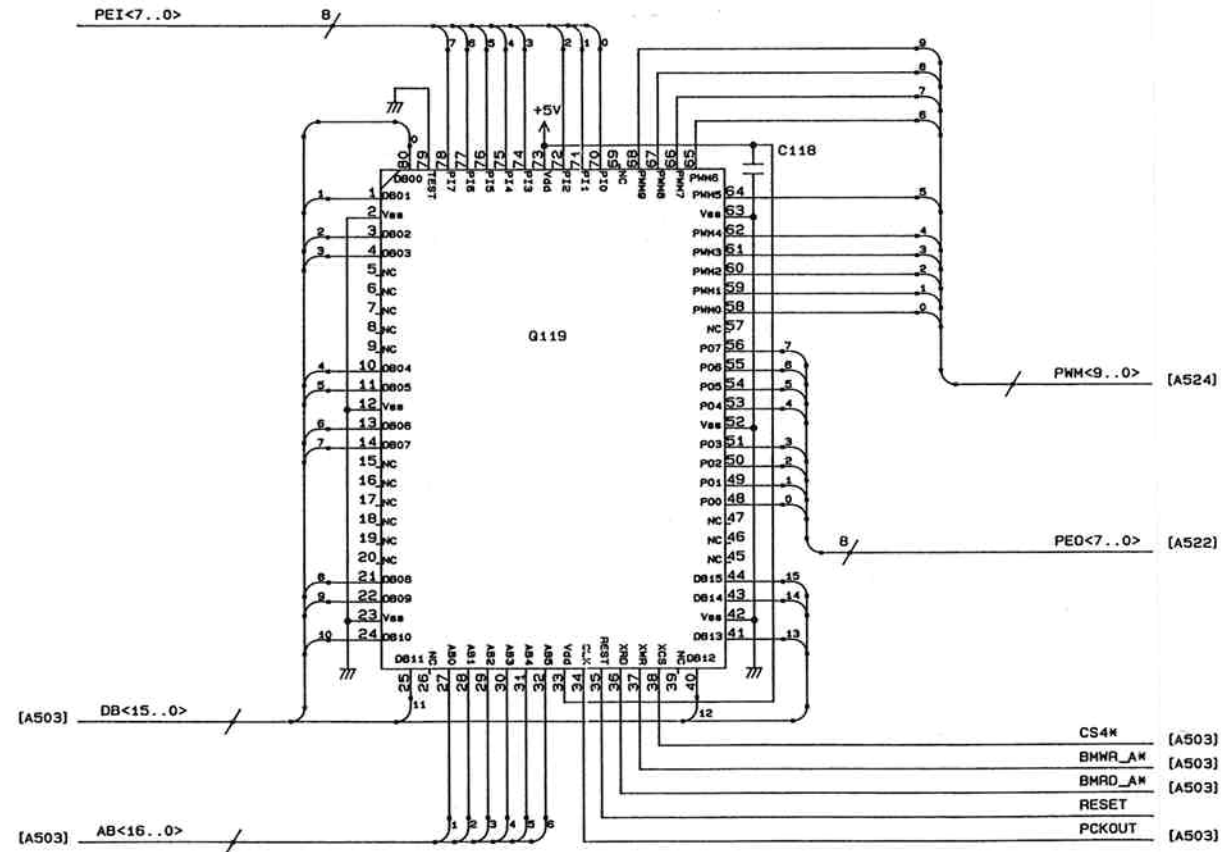
• MASTER ROM [A504]



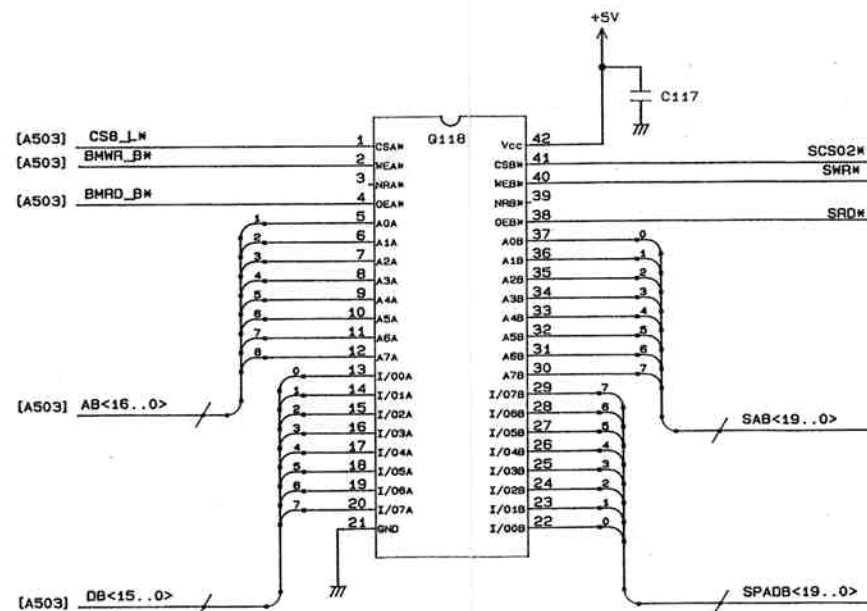


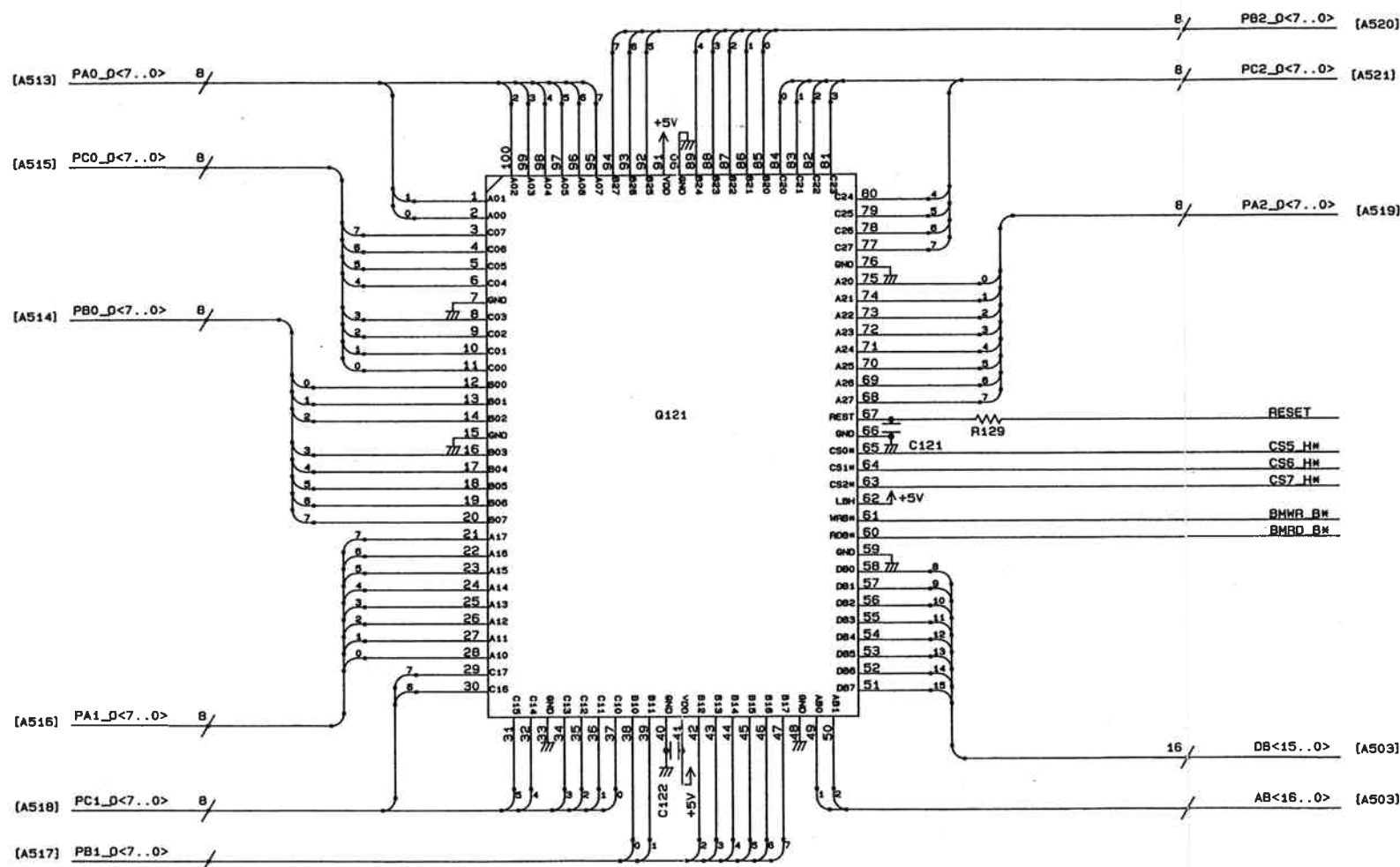
• COMMON RAM [A506]

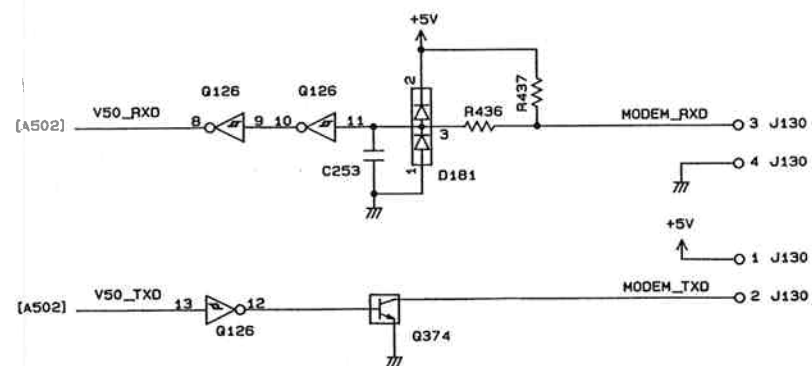
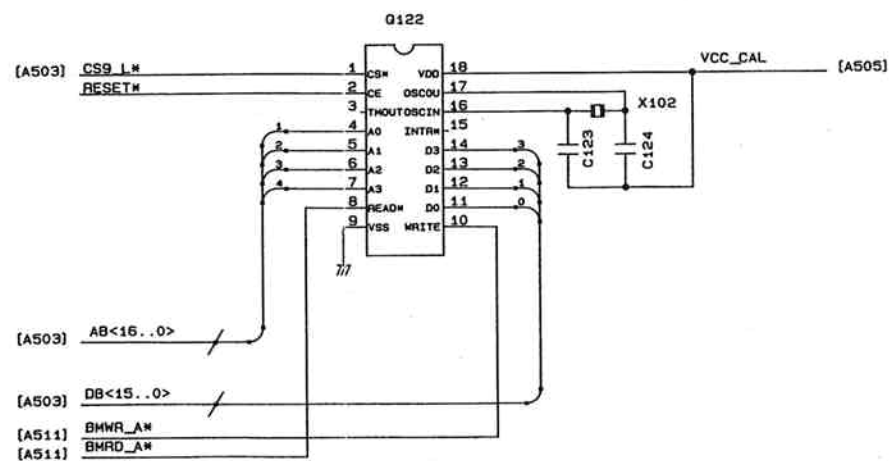


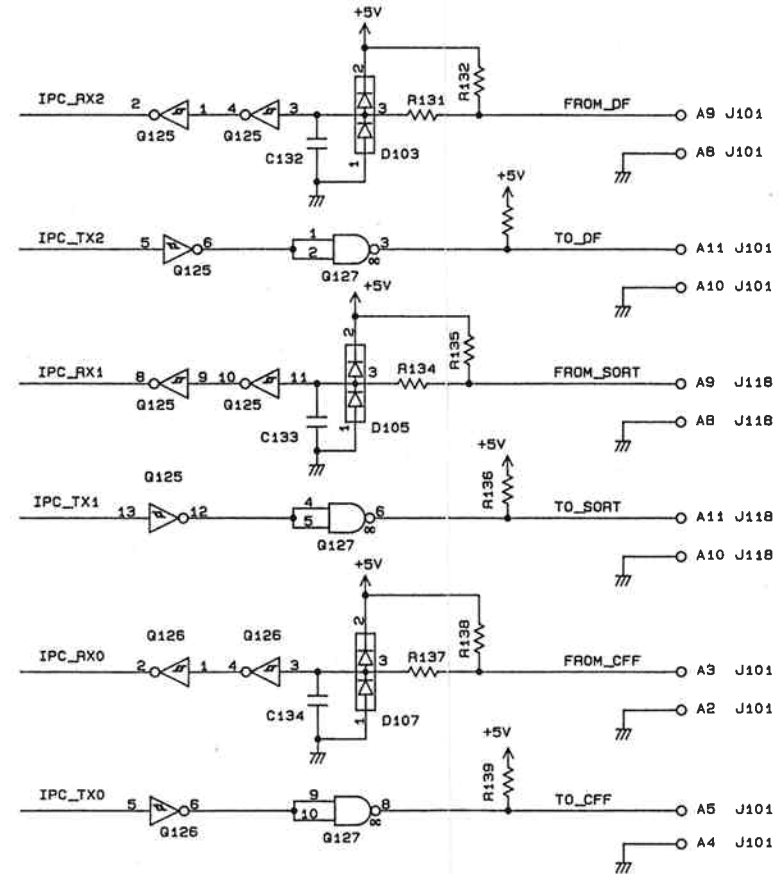
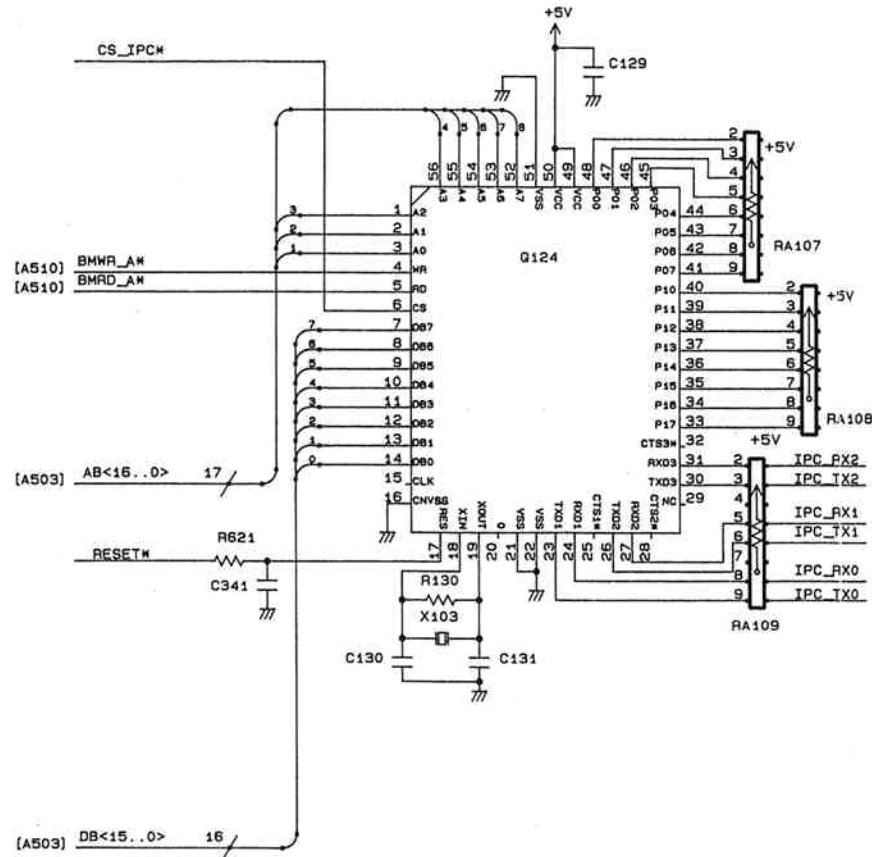


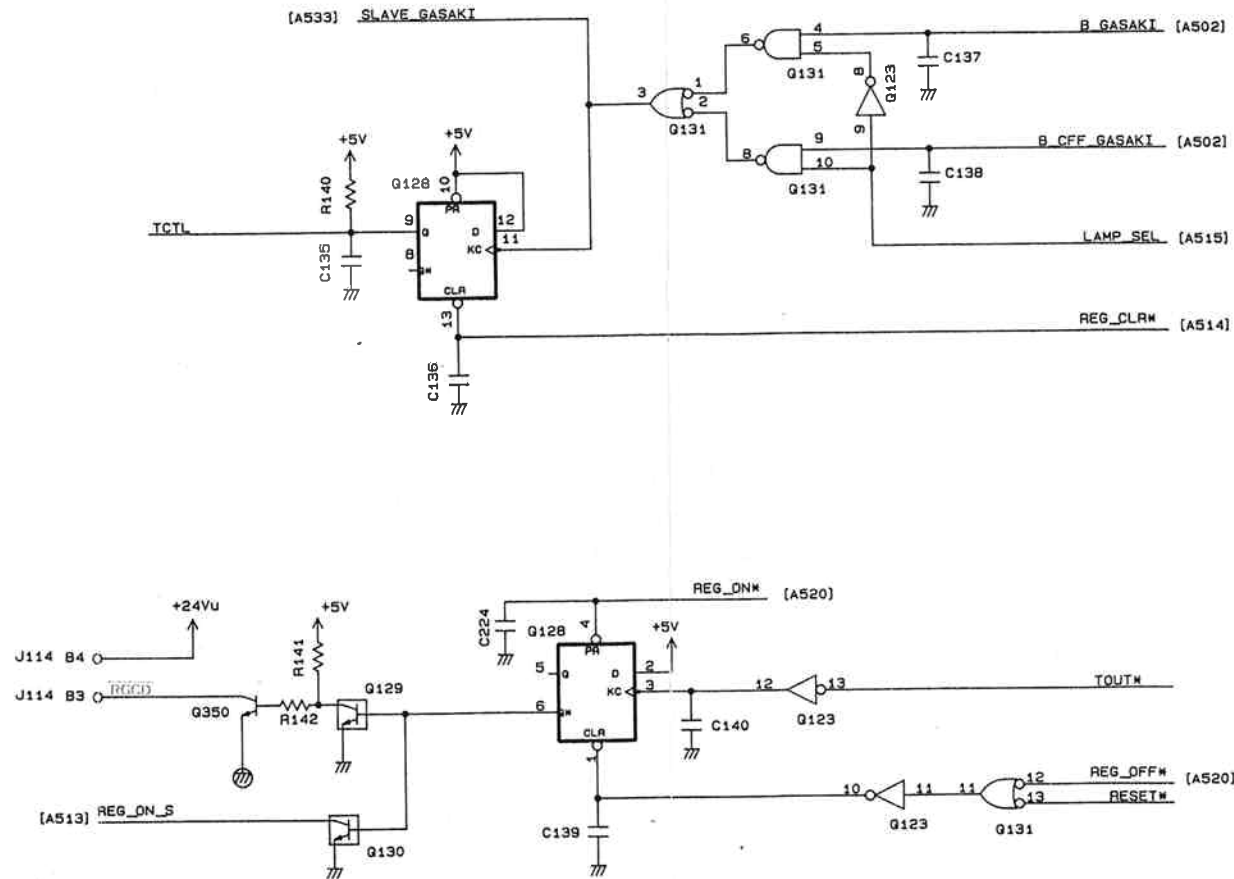
• COMMON RAM [A506]

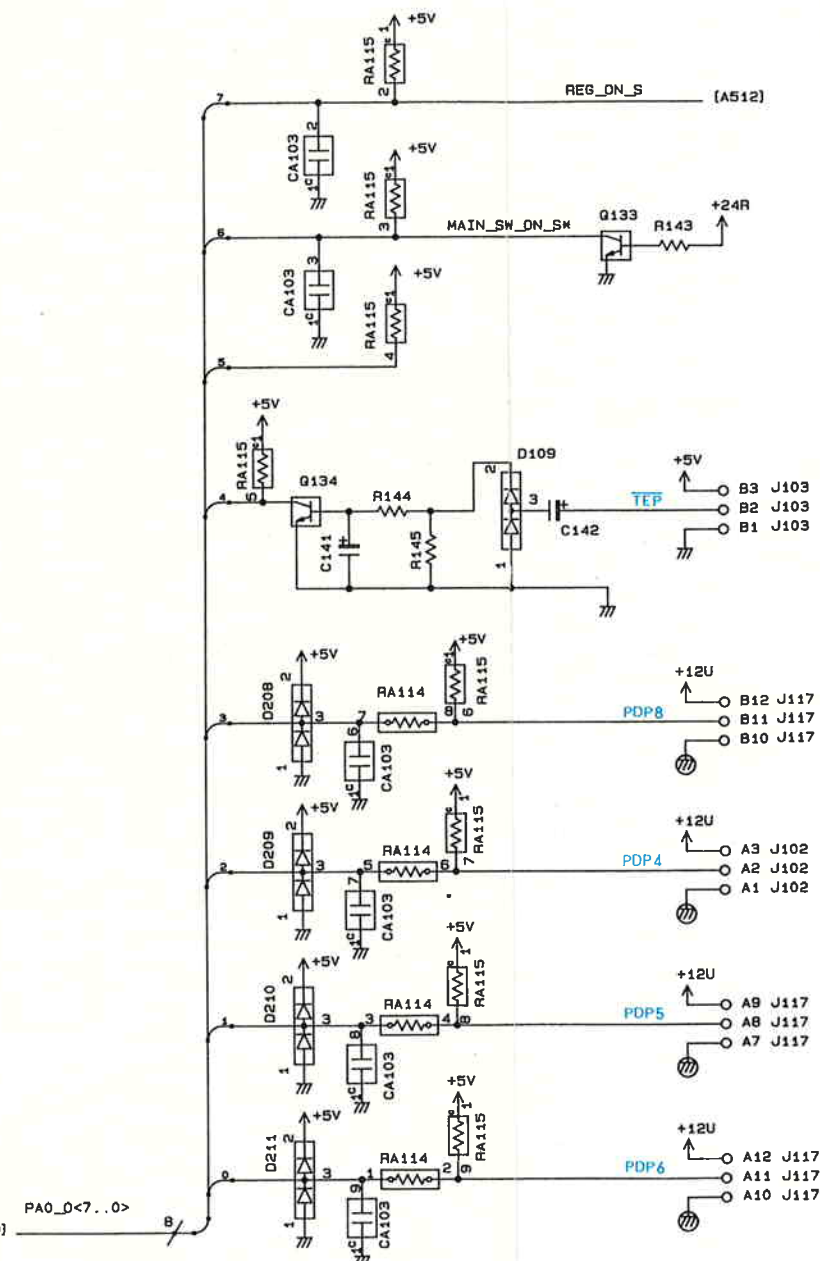
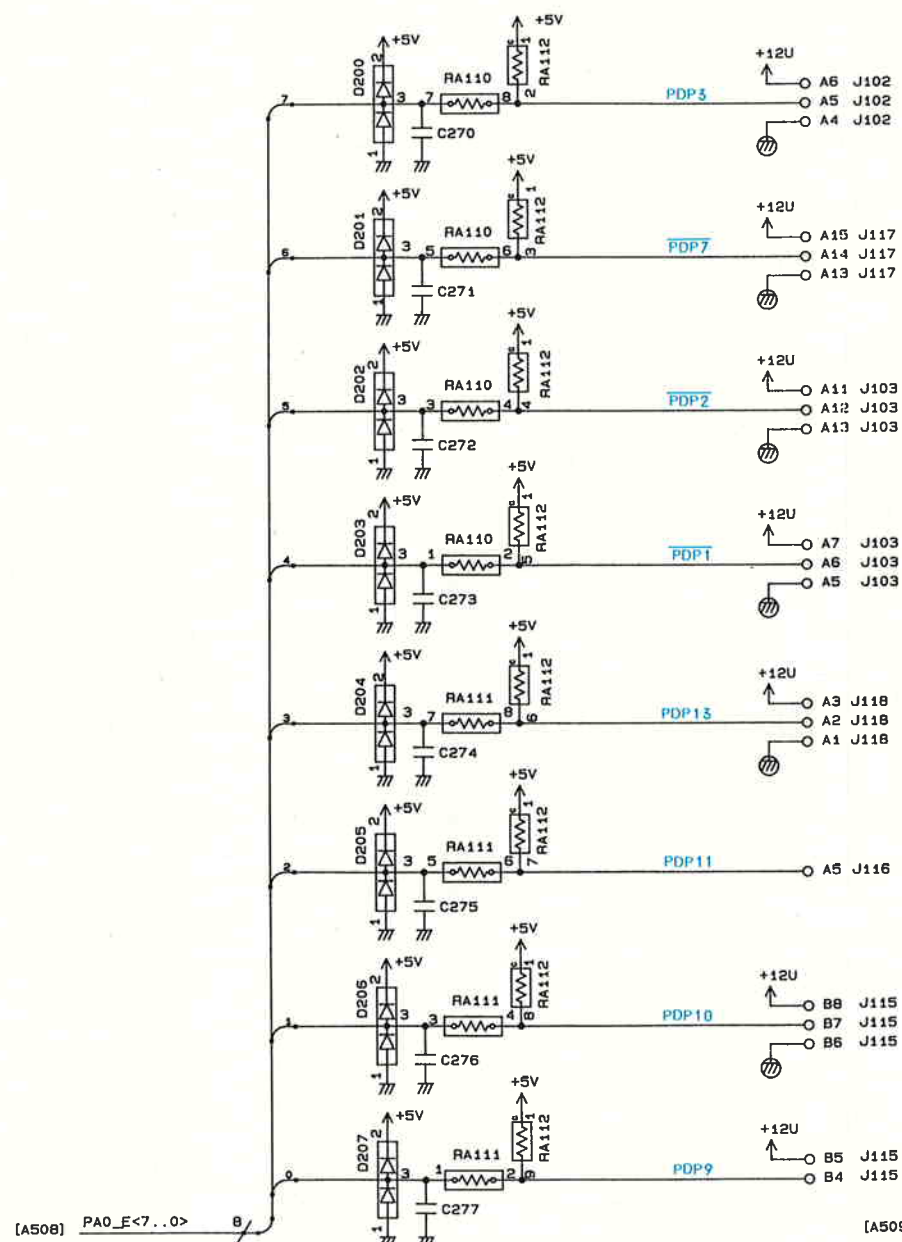




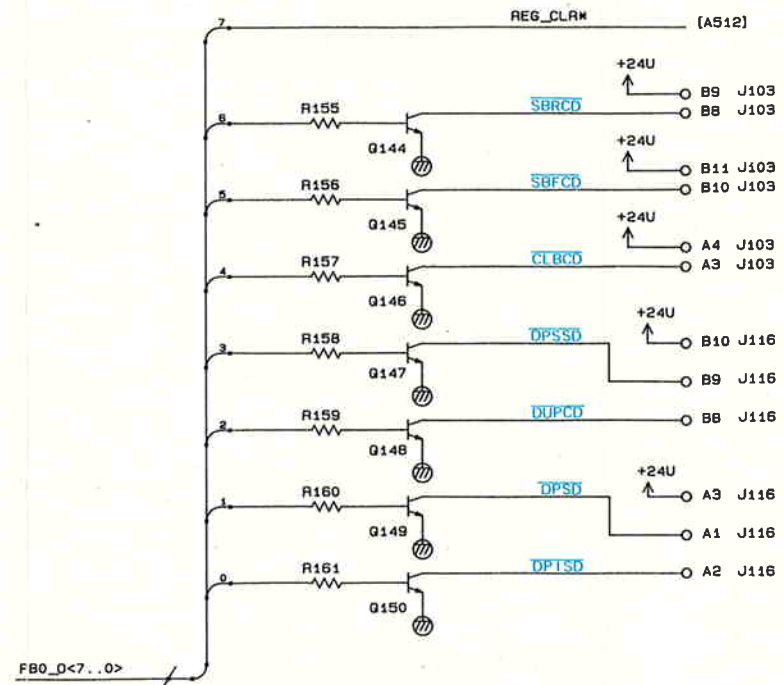
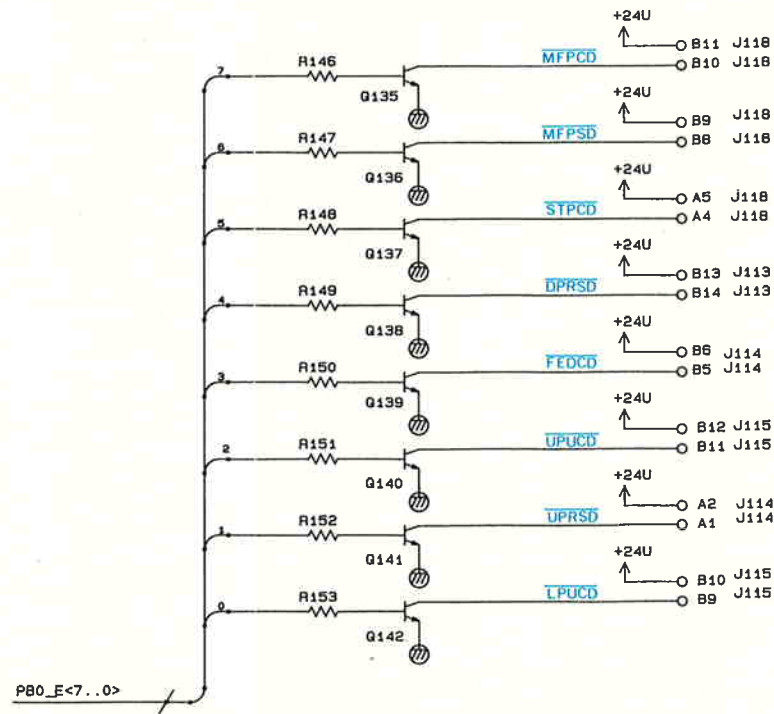


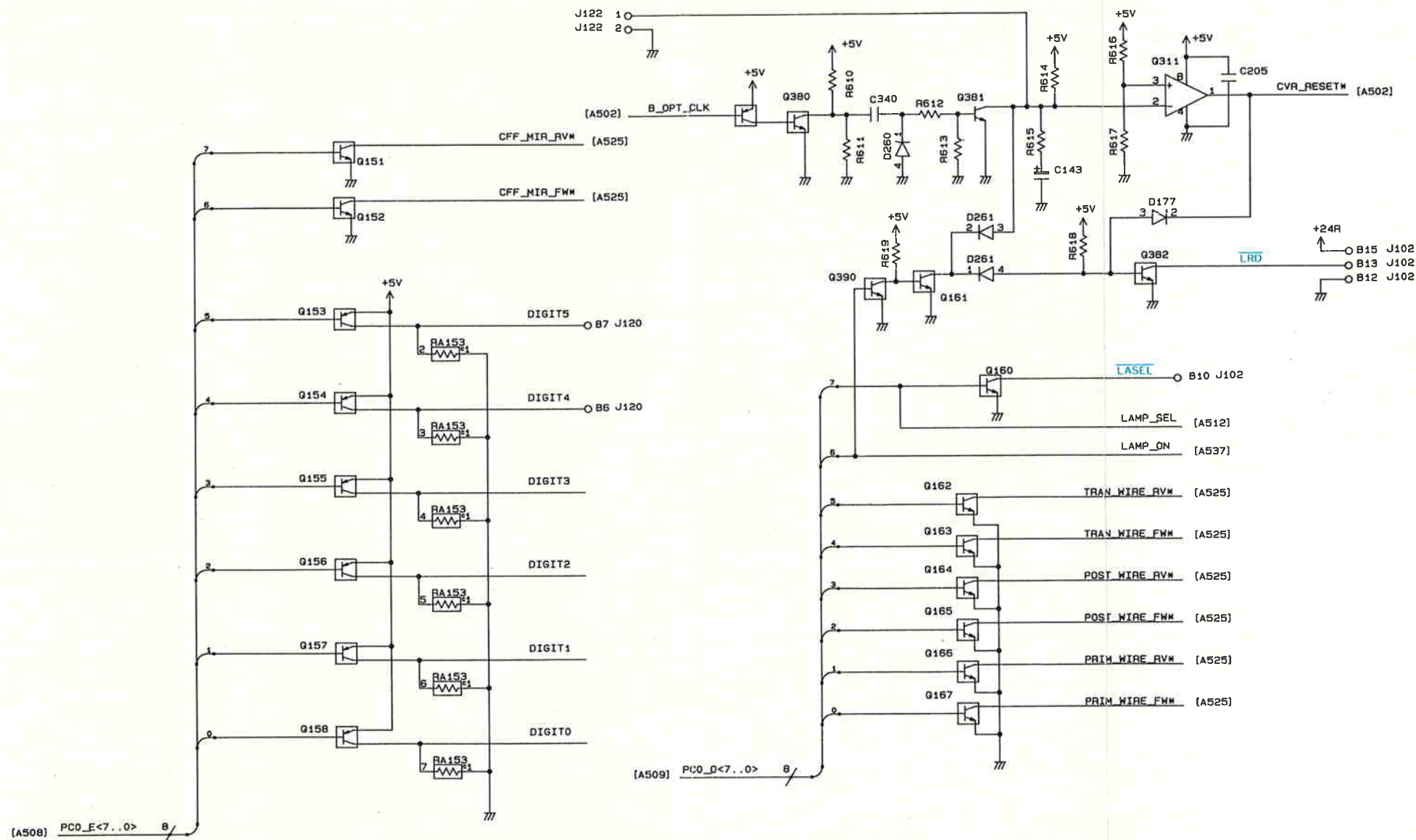




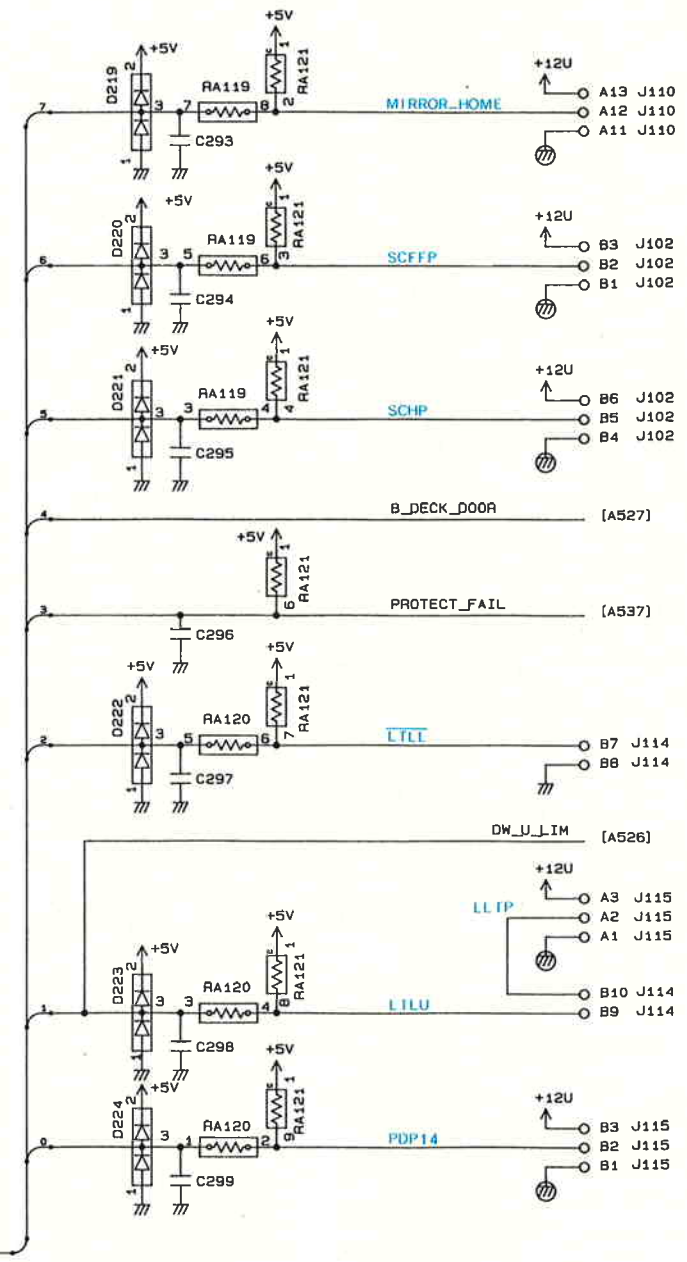
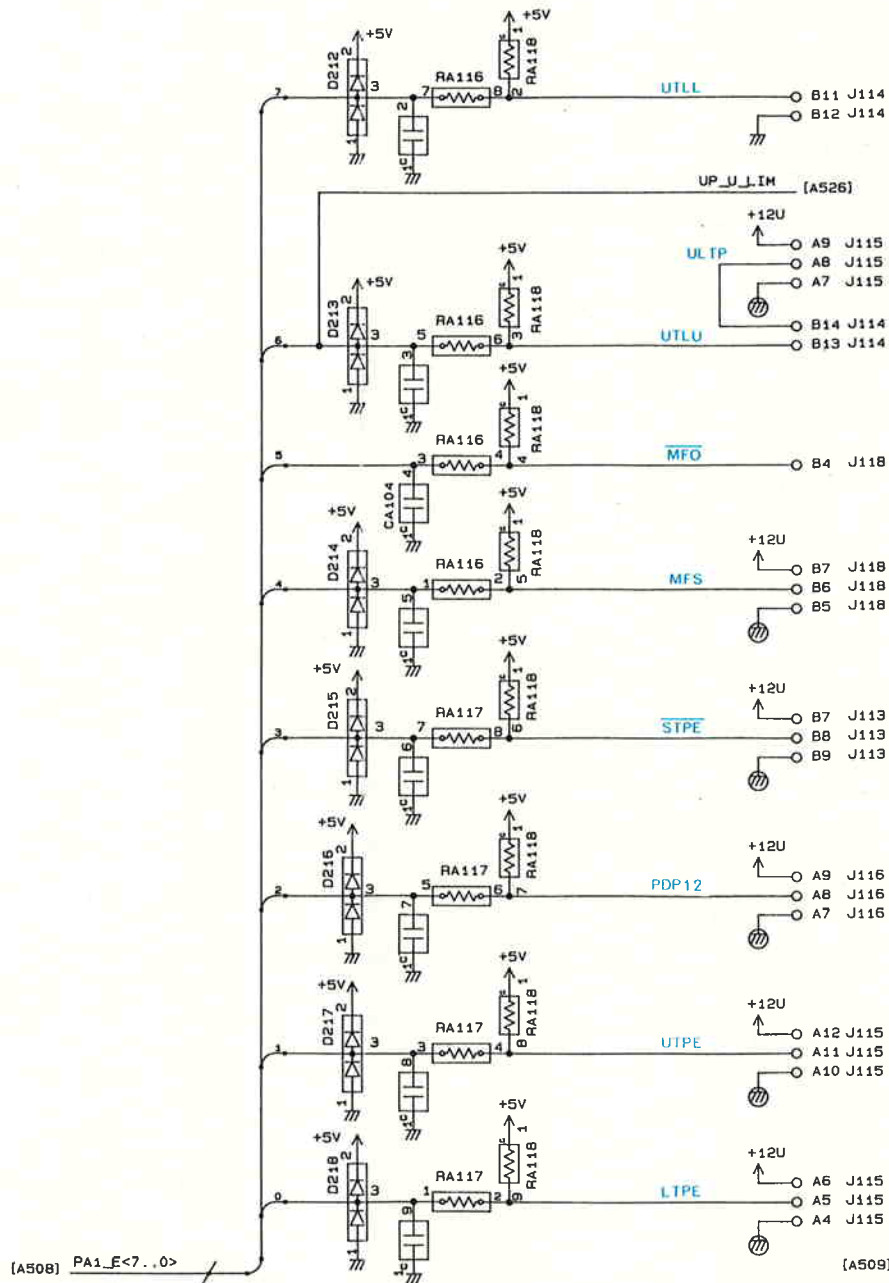


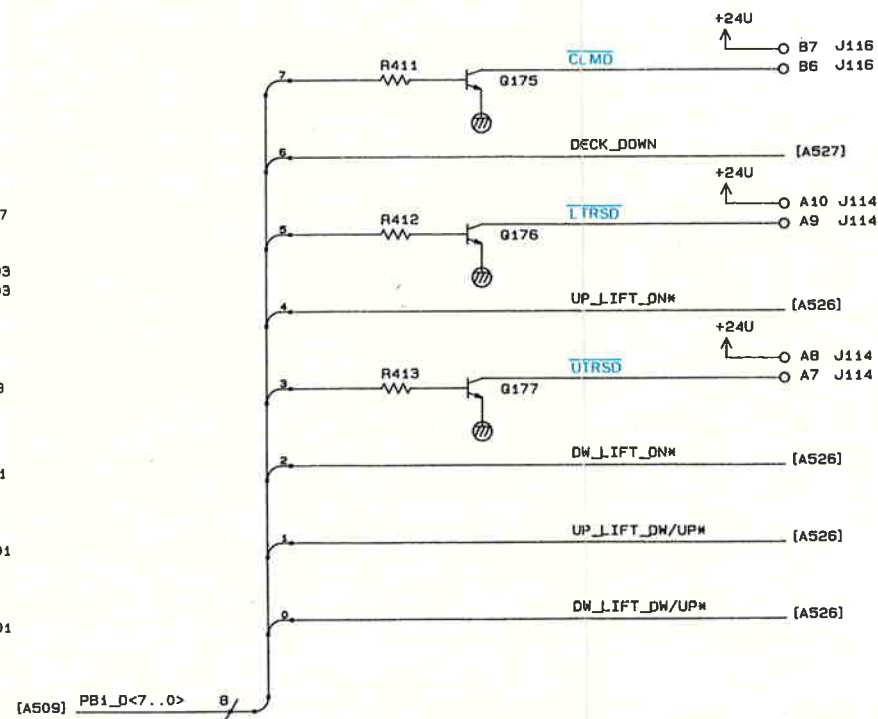
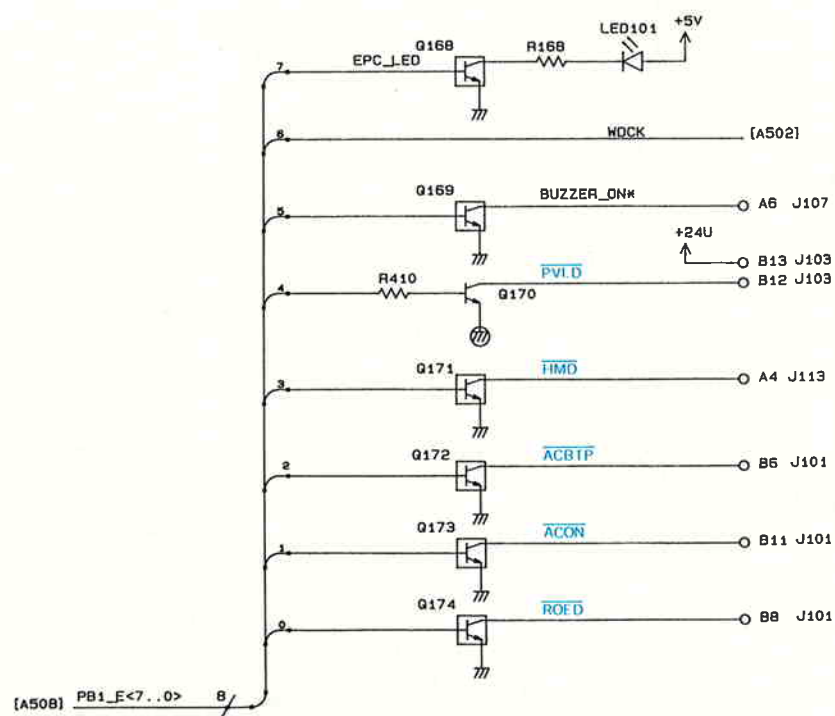
• MASTER PB0 [A514]



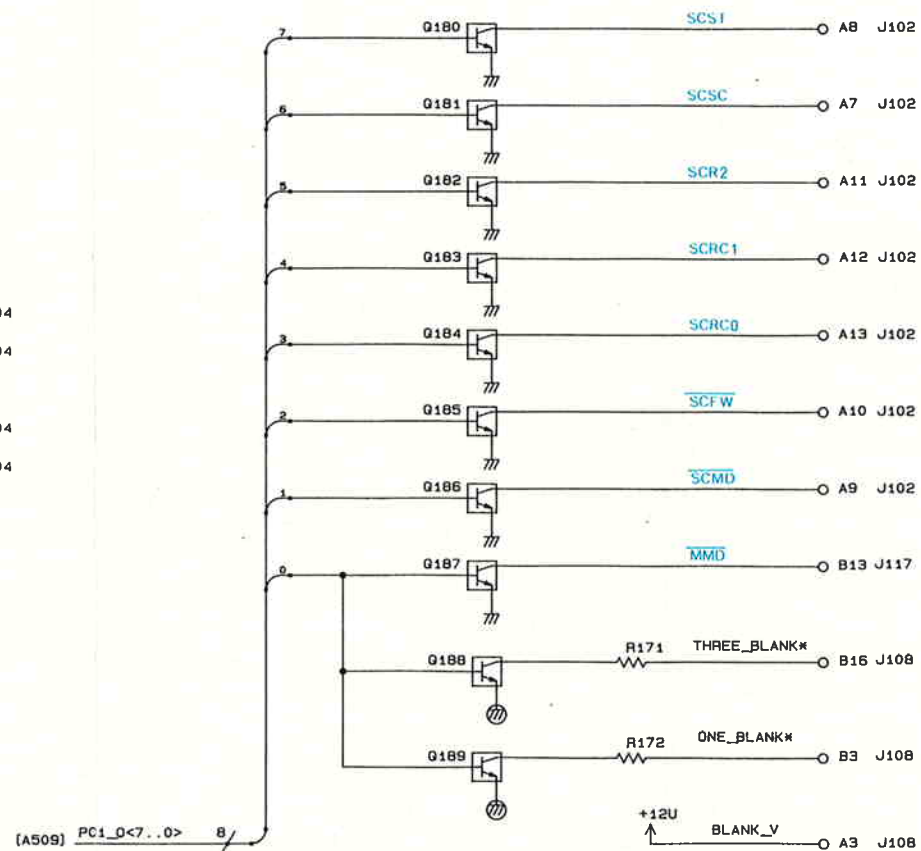
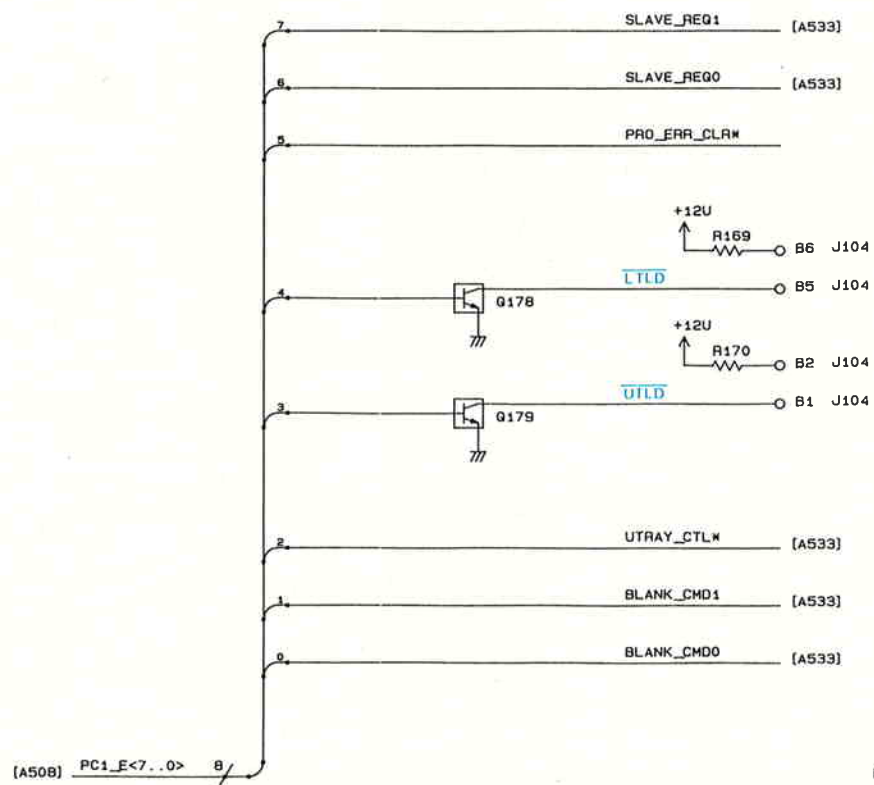


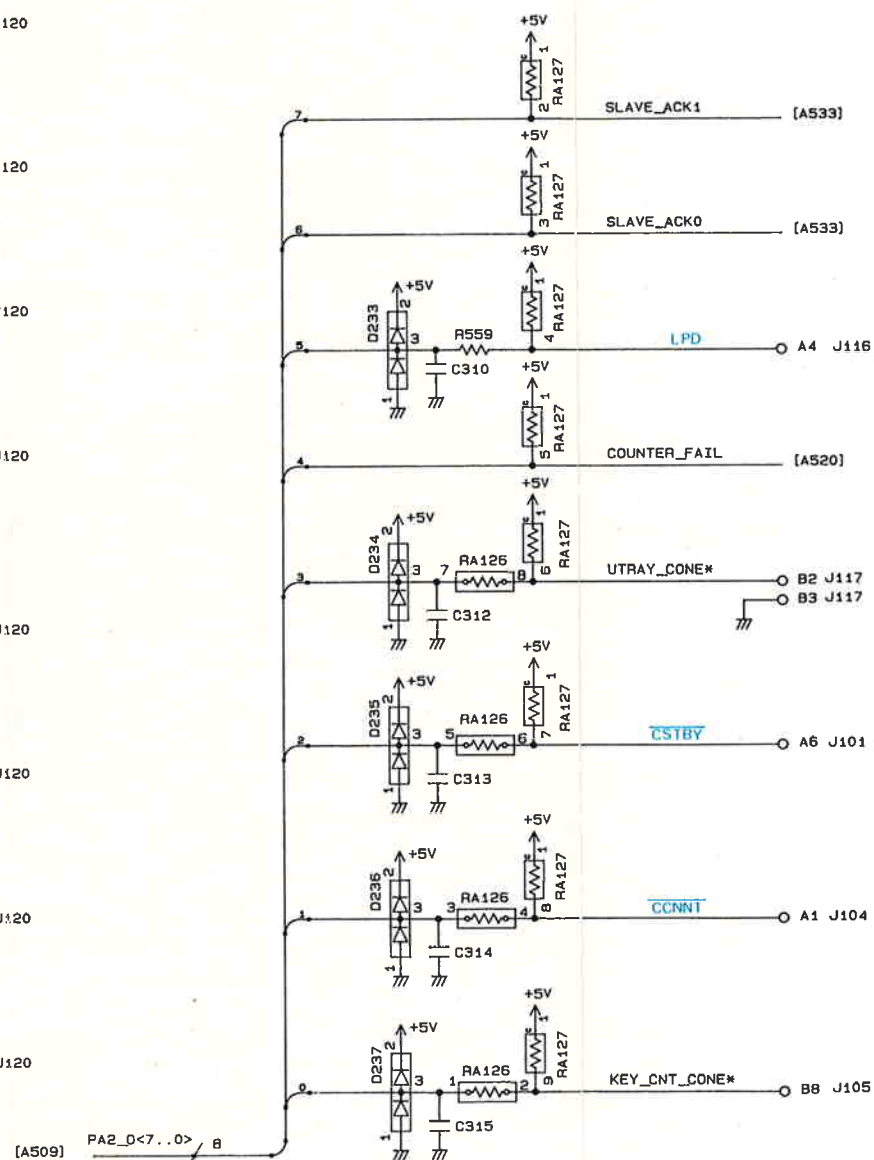
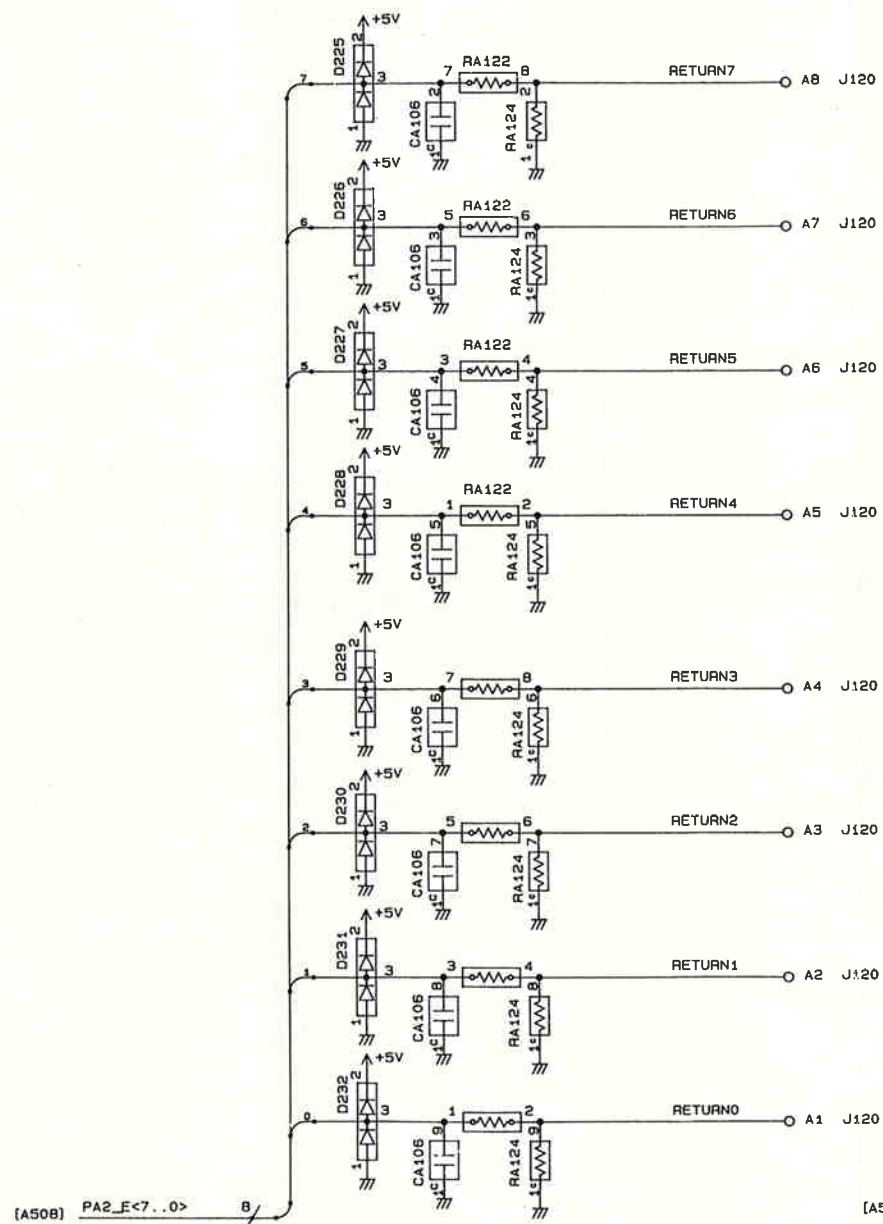
• MASTER PA1 [A516]

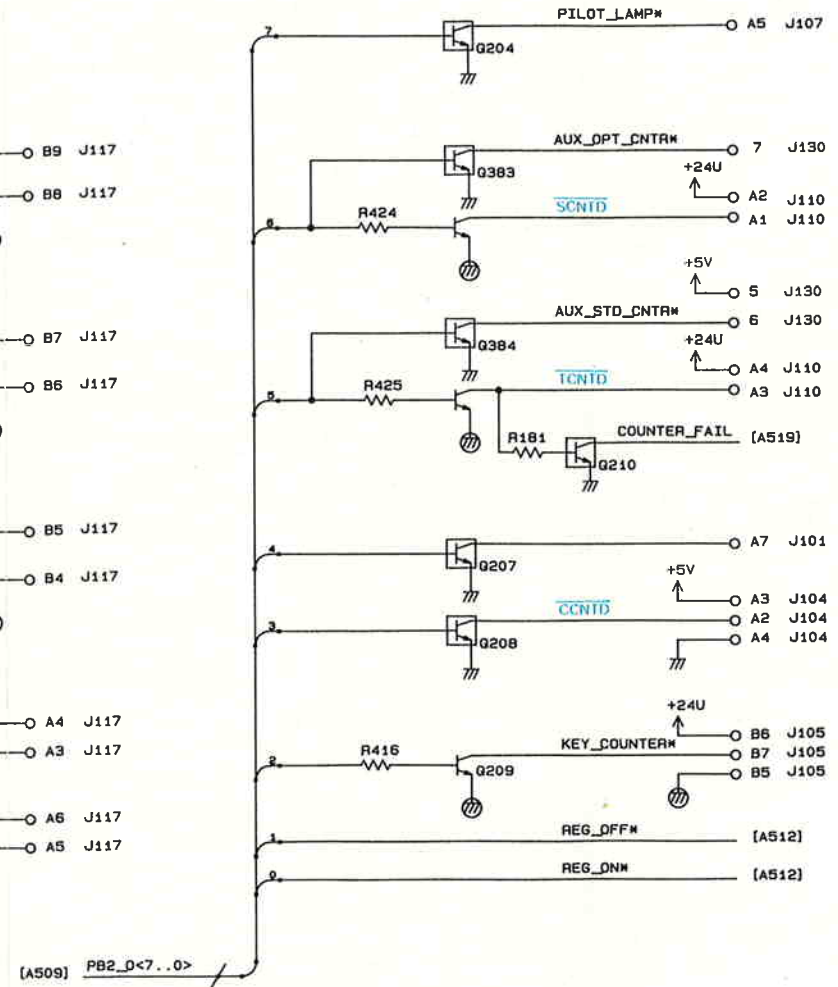
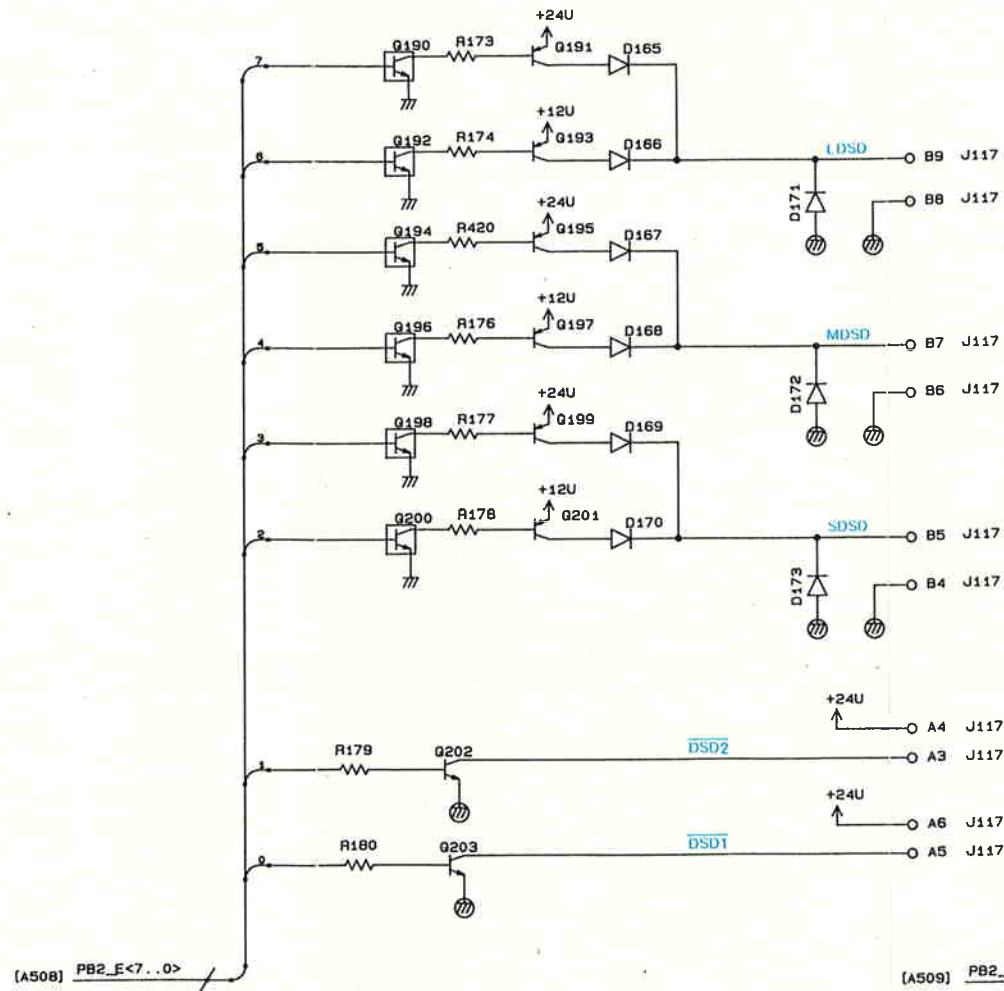


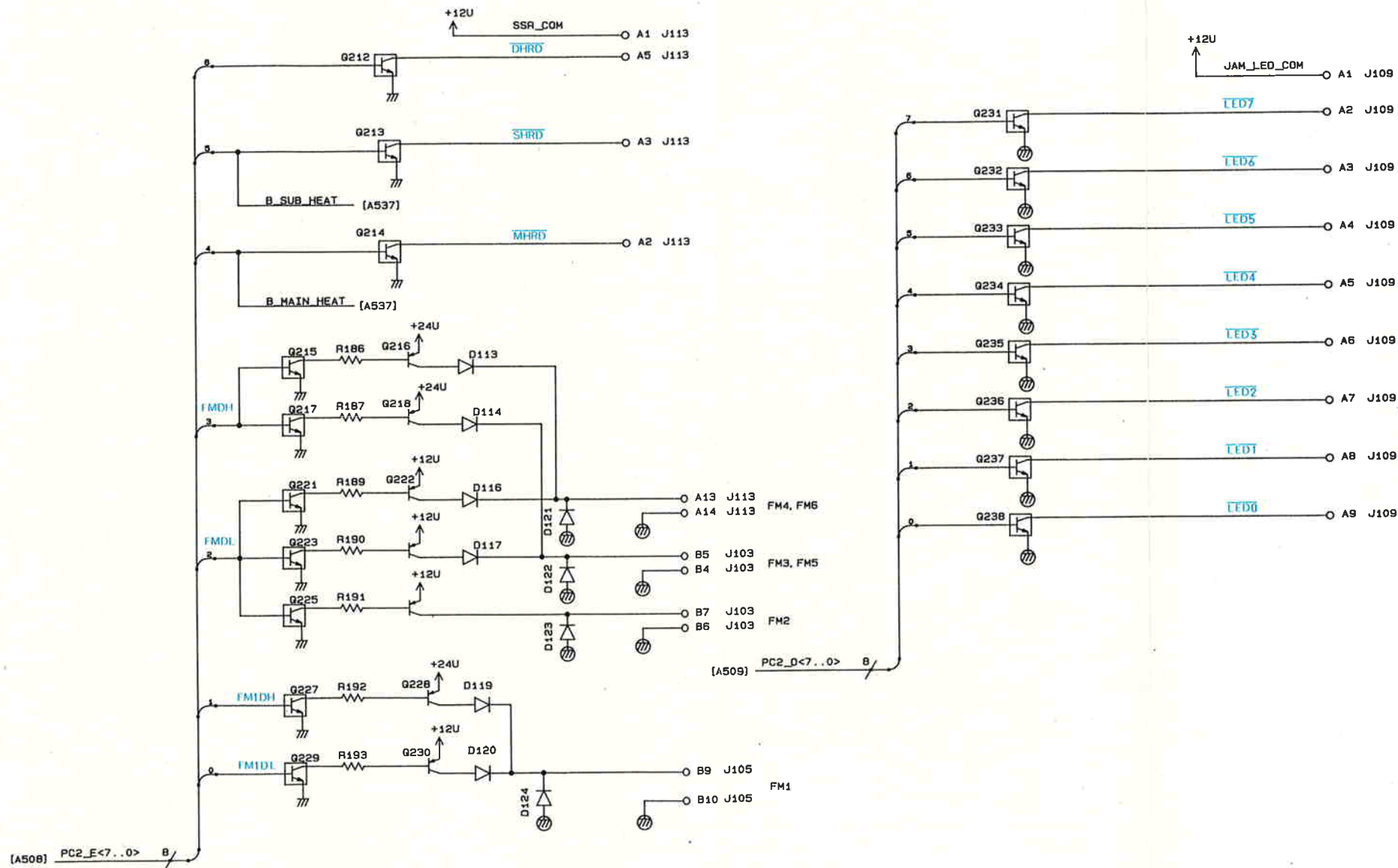


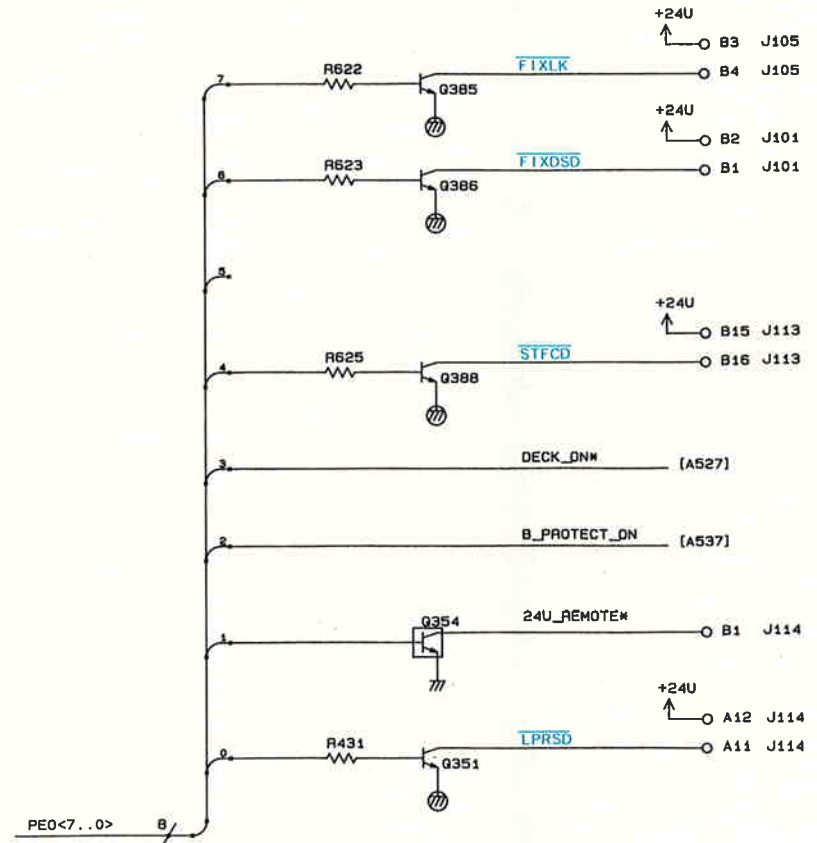
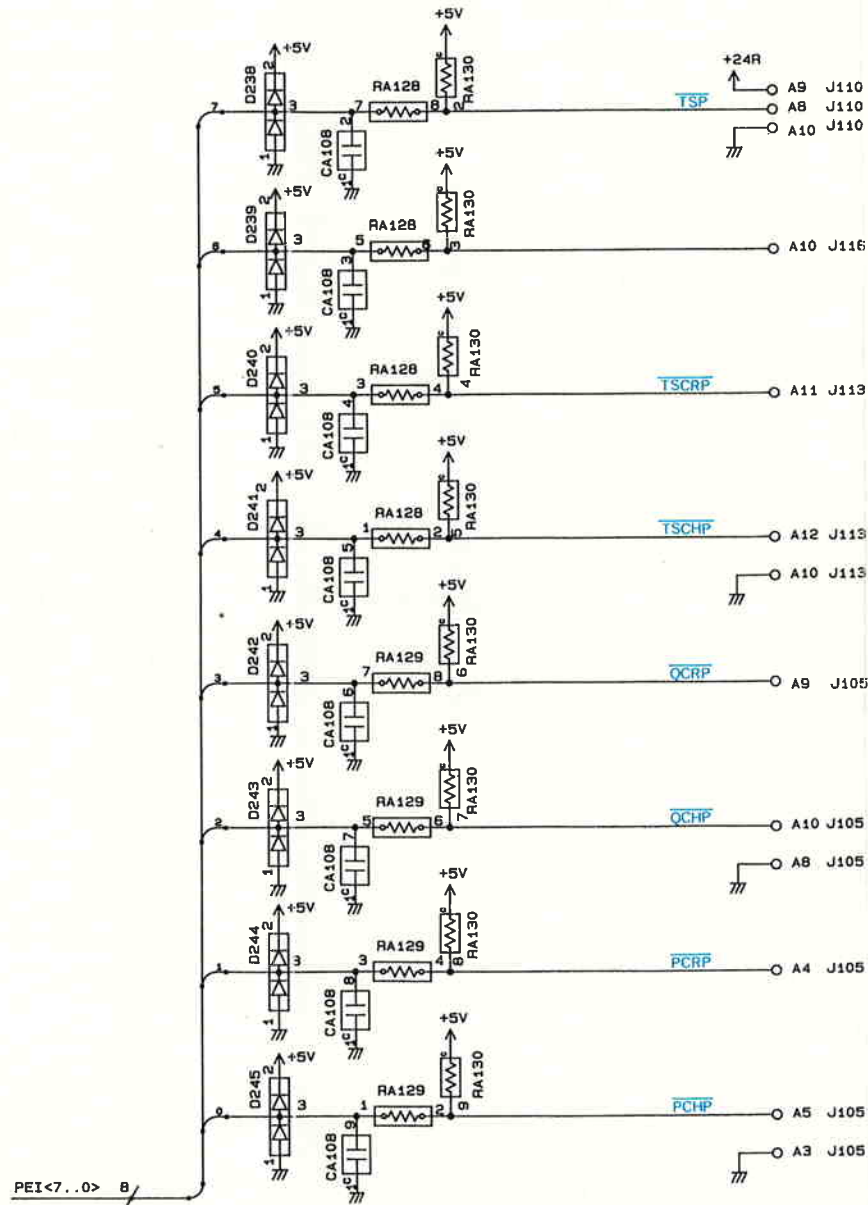
• MASTER PC1 [A518]

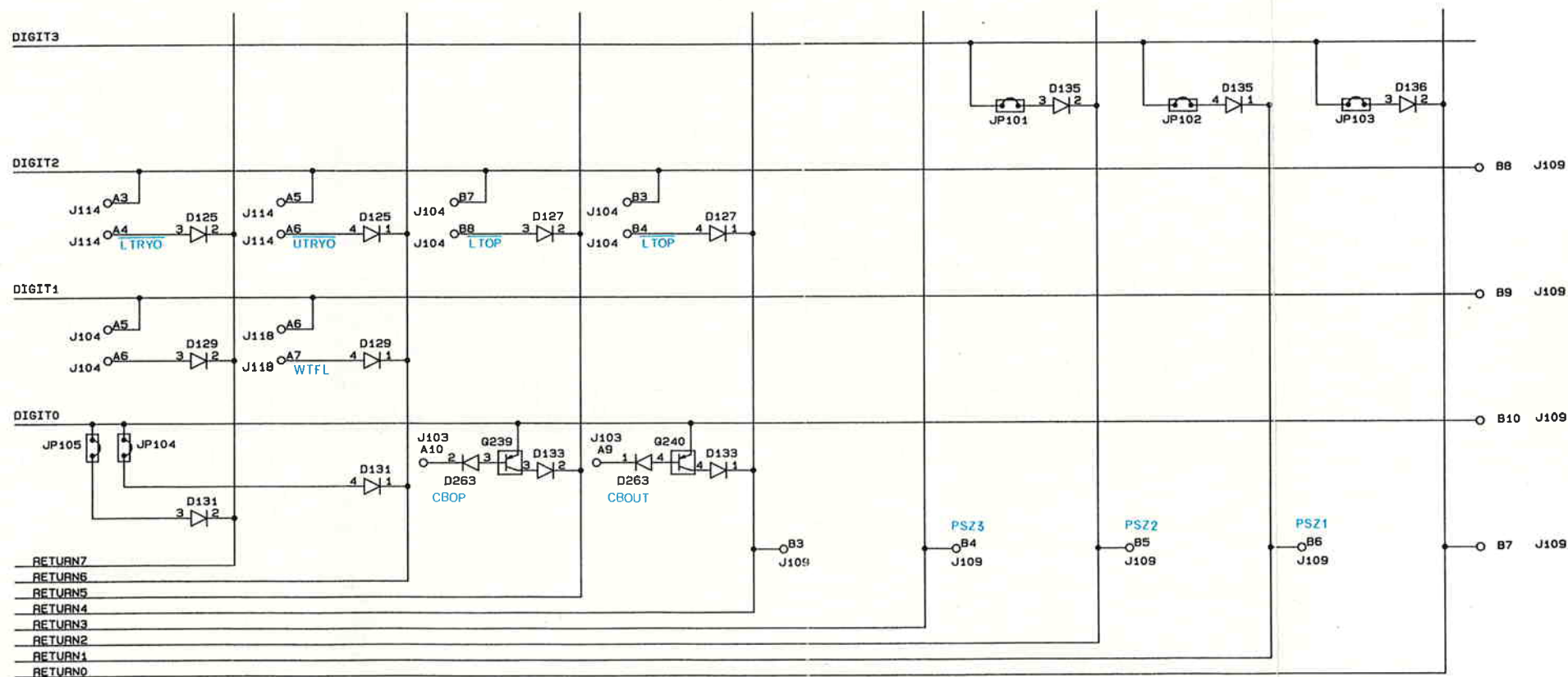




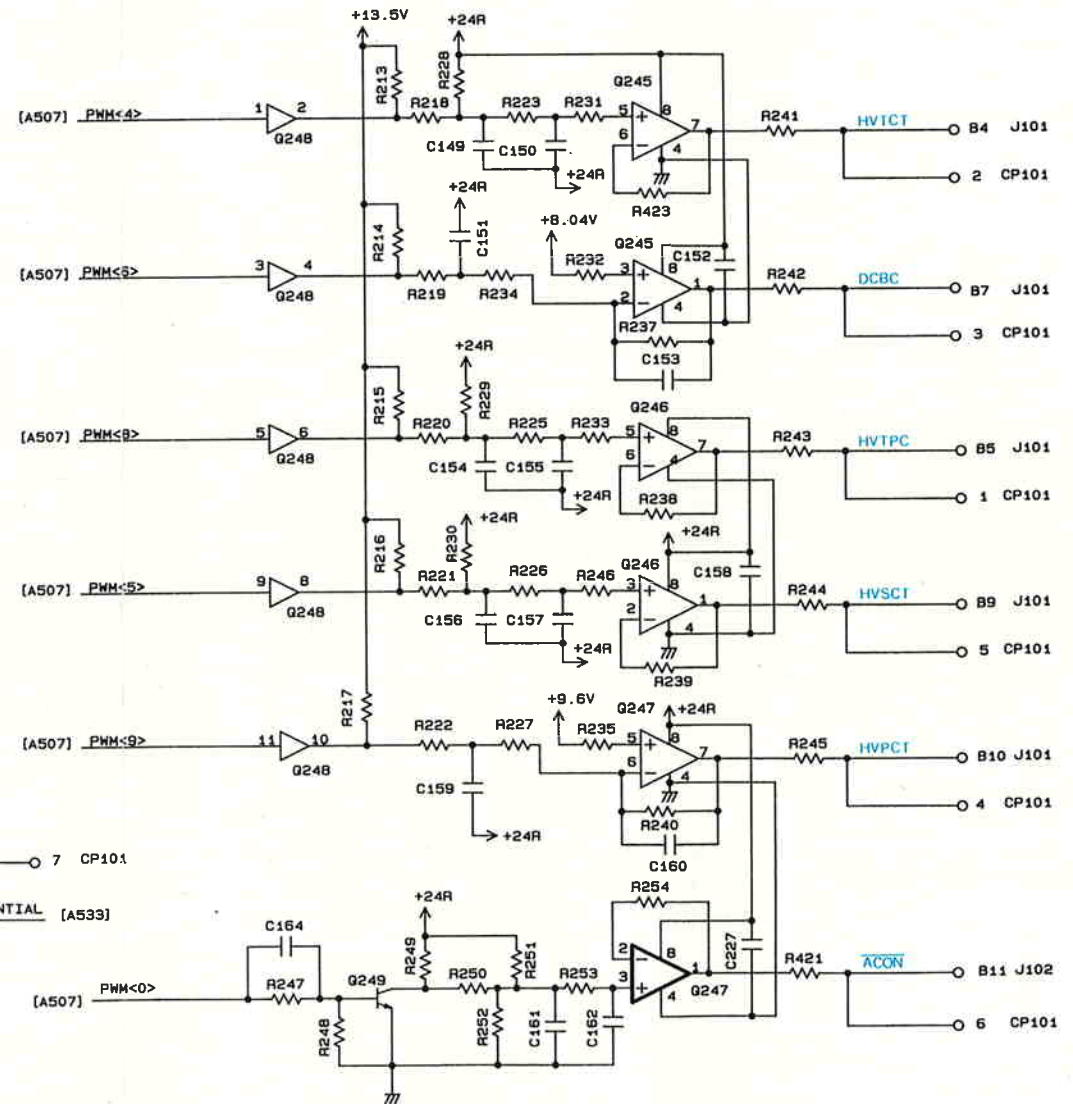
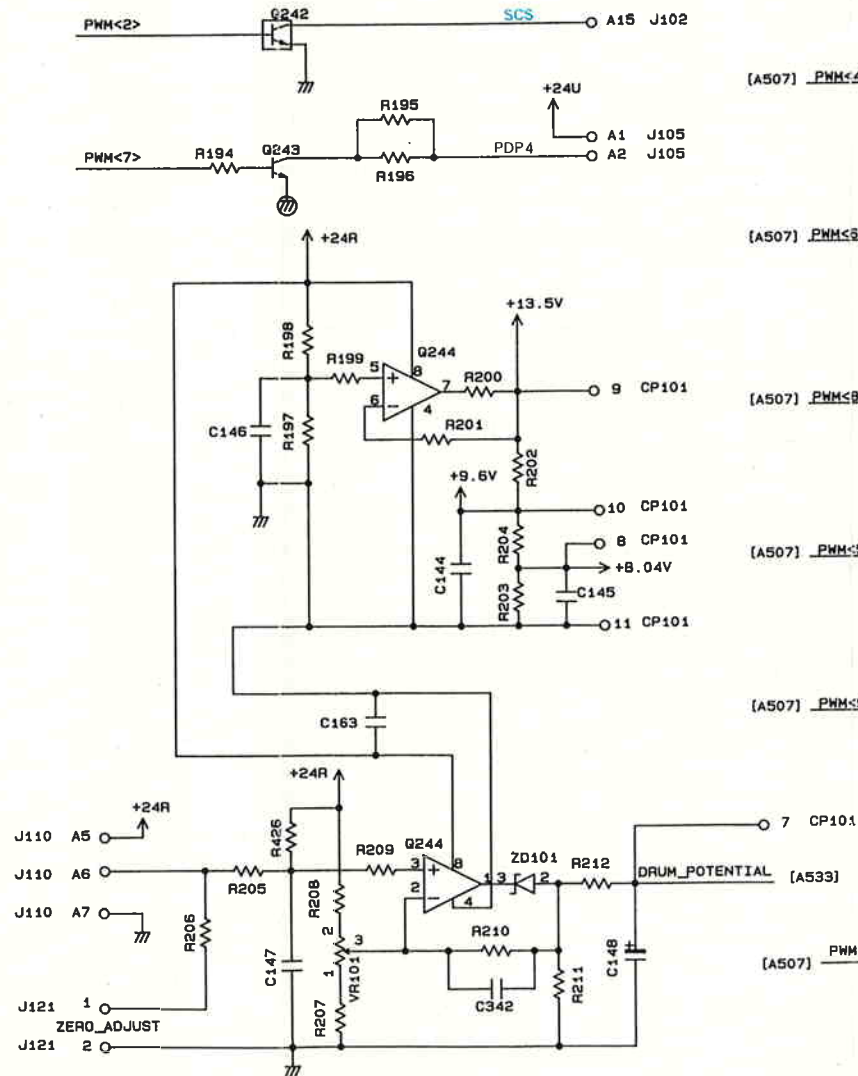


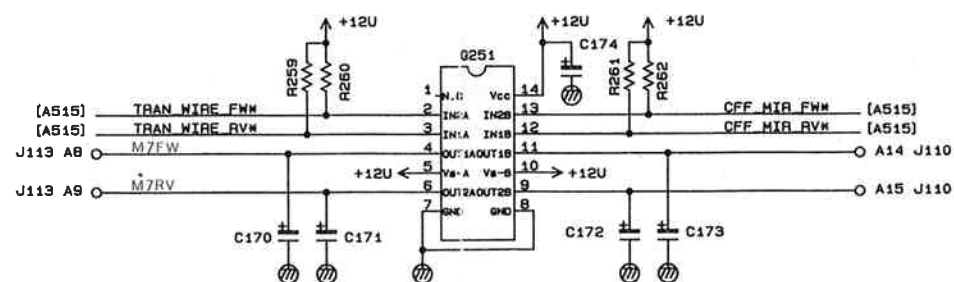
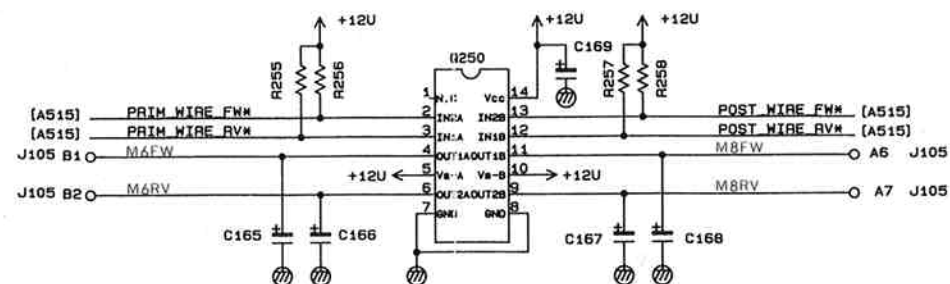


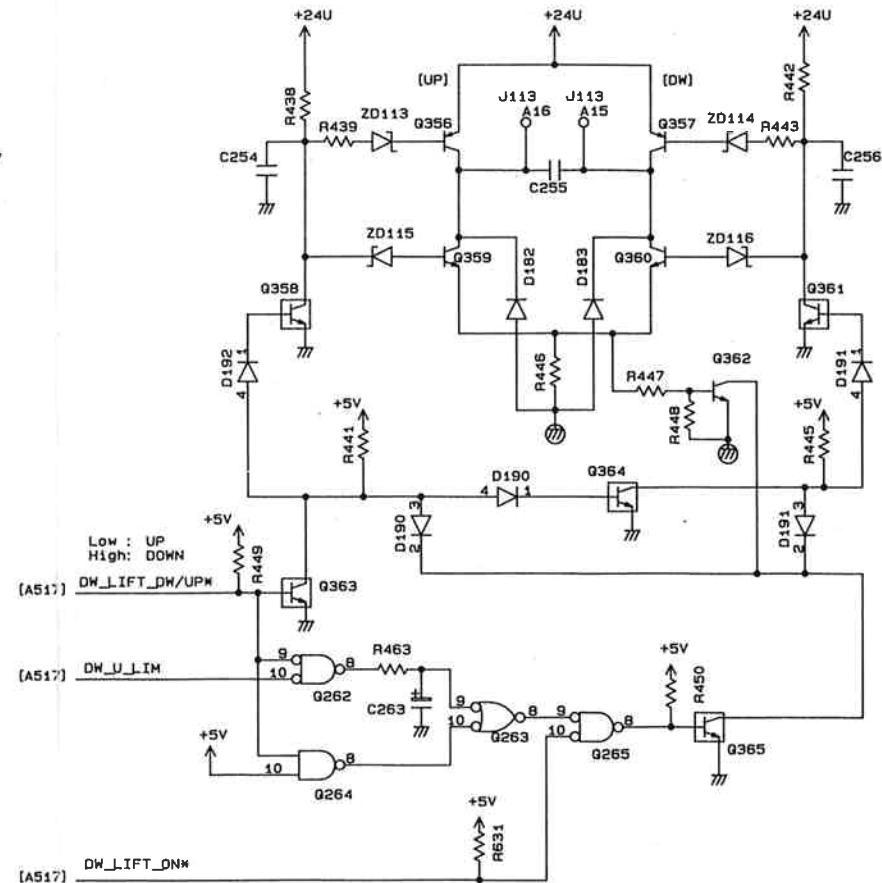
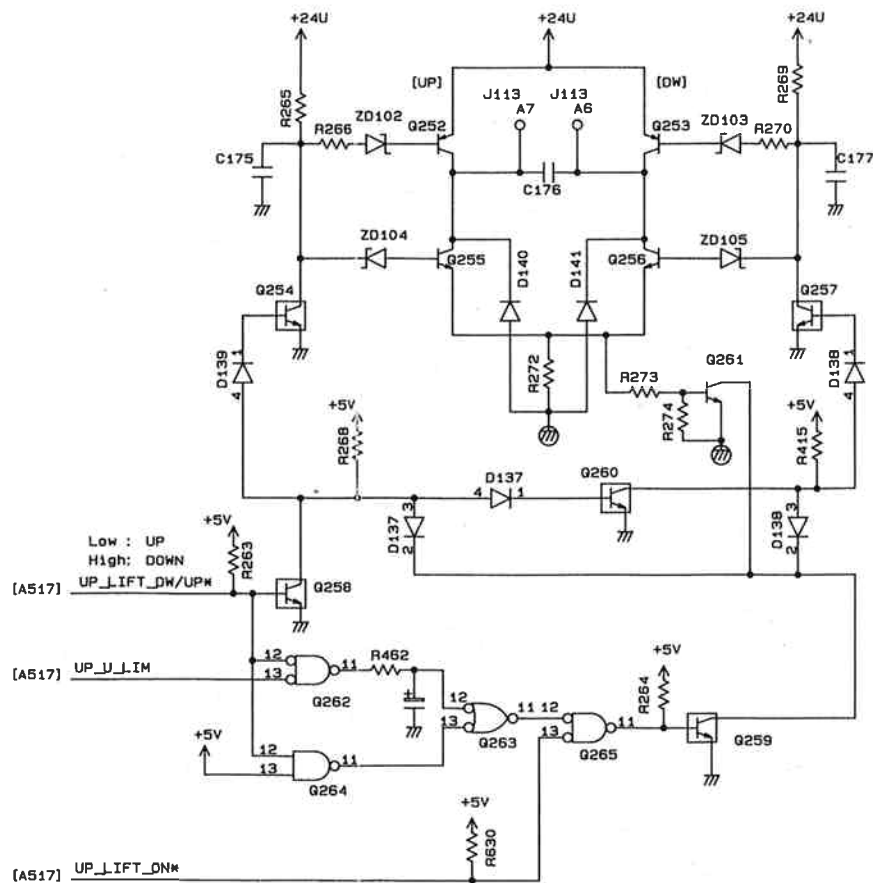


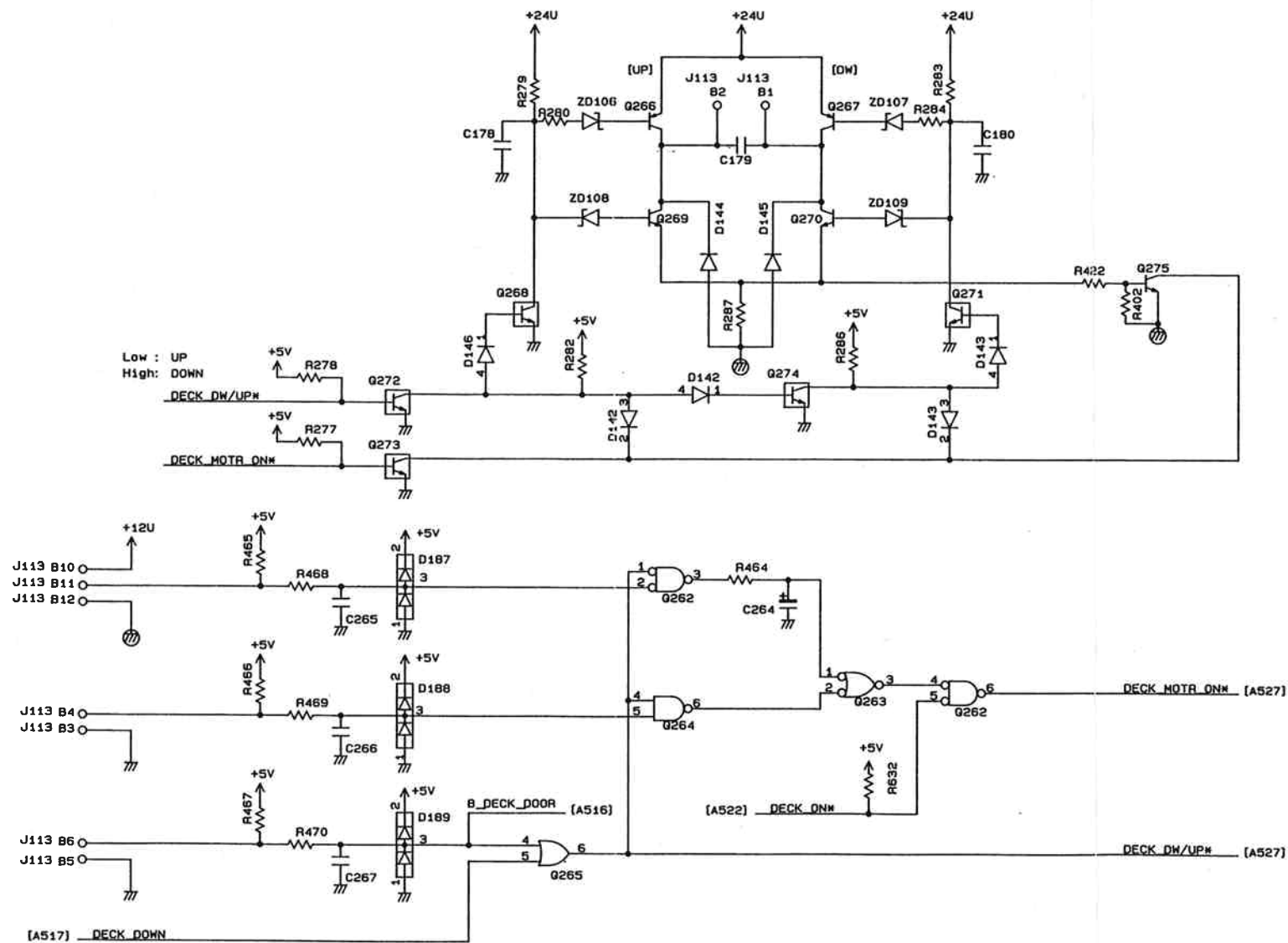


- PWM OUTPUT [A524]

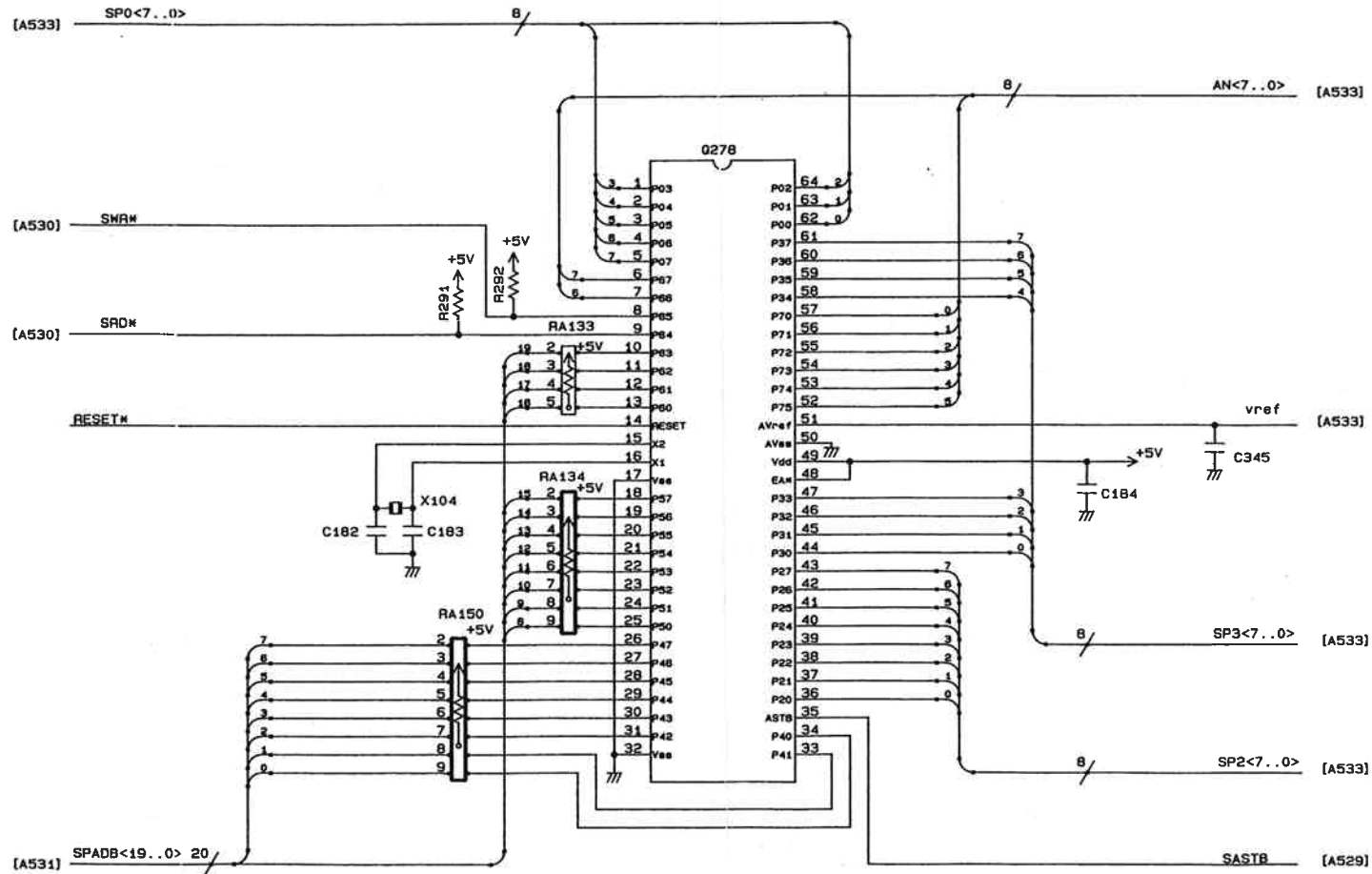


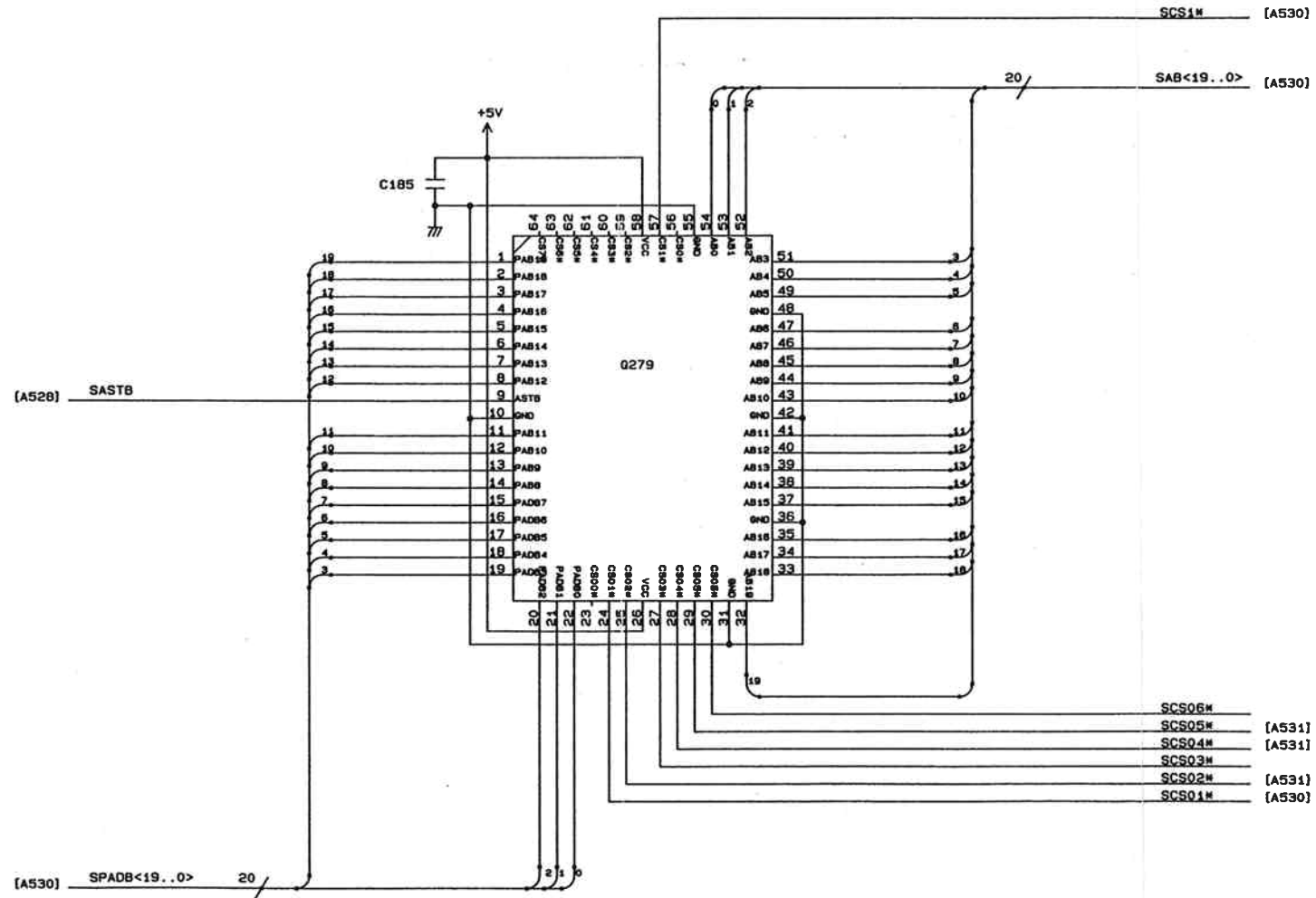


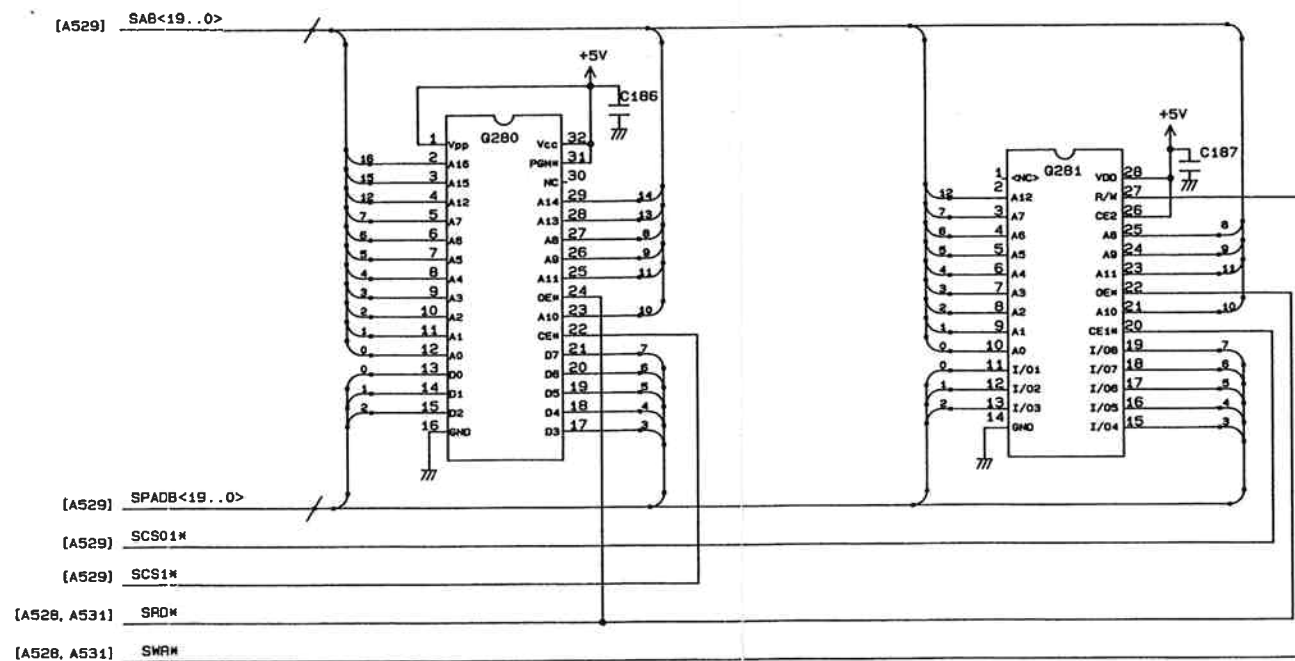


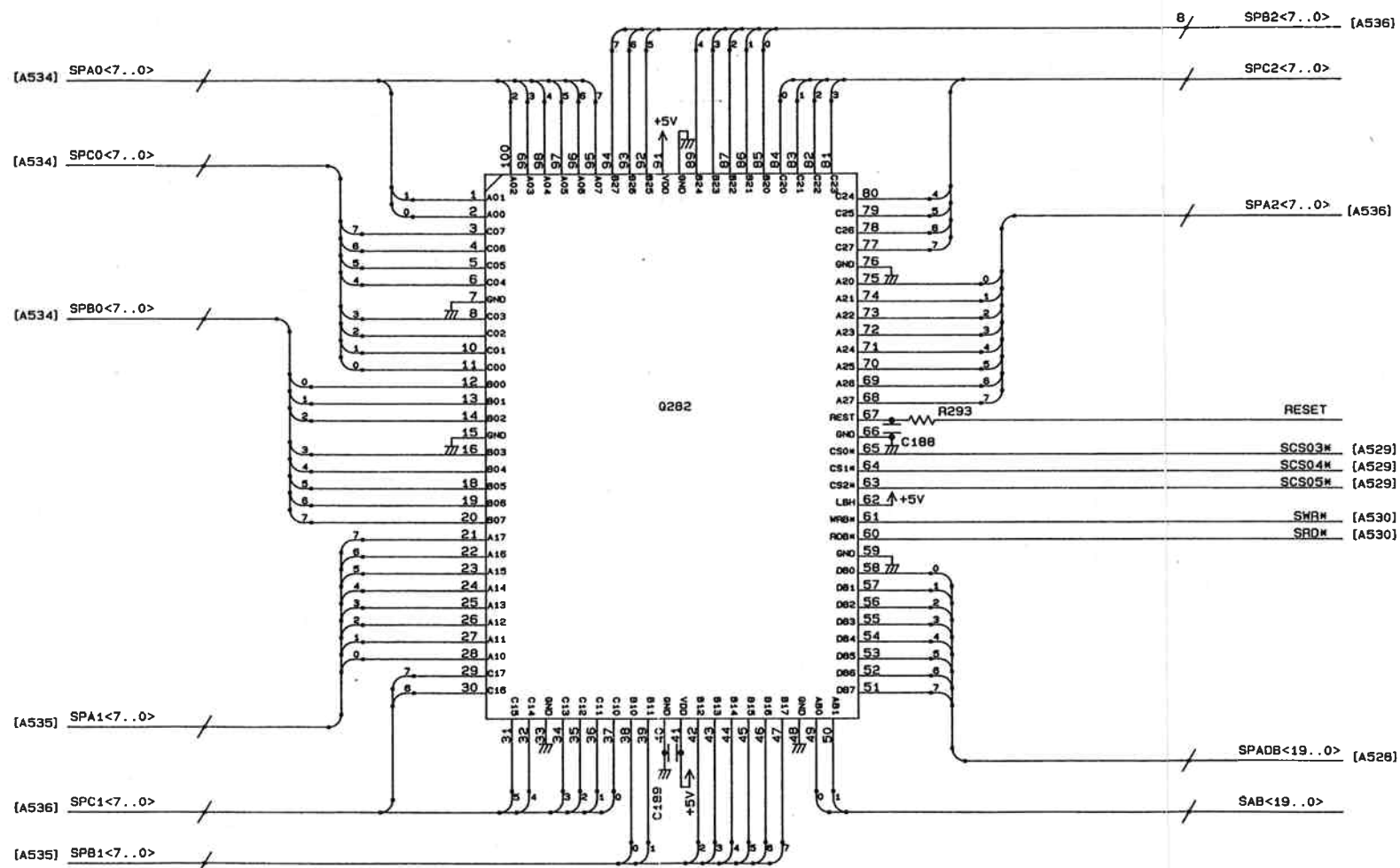


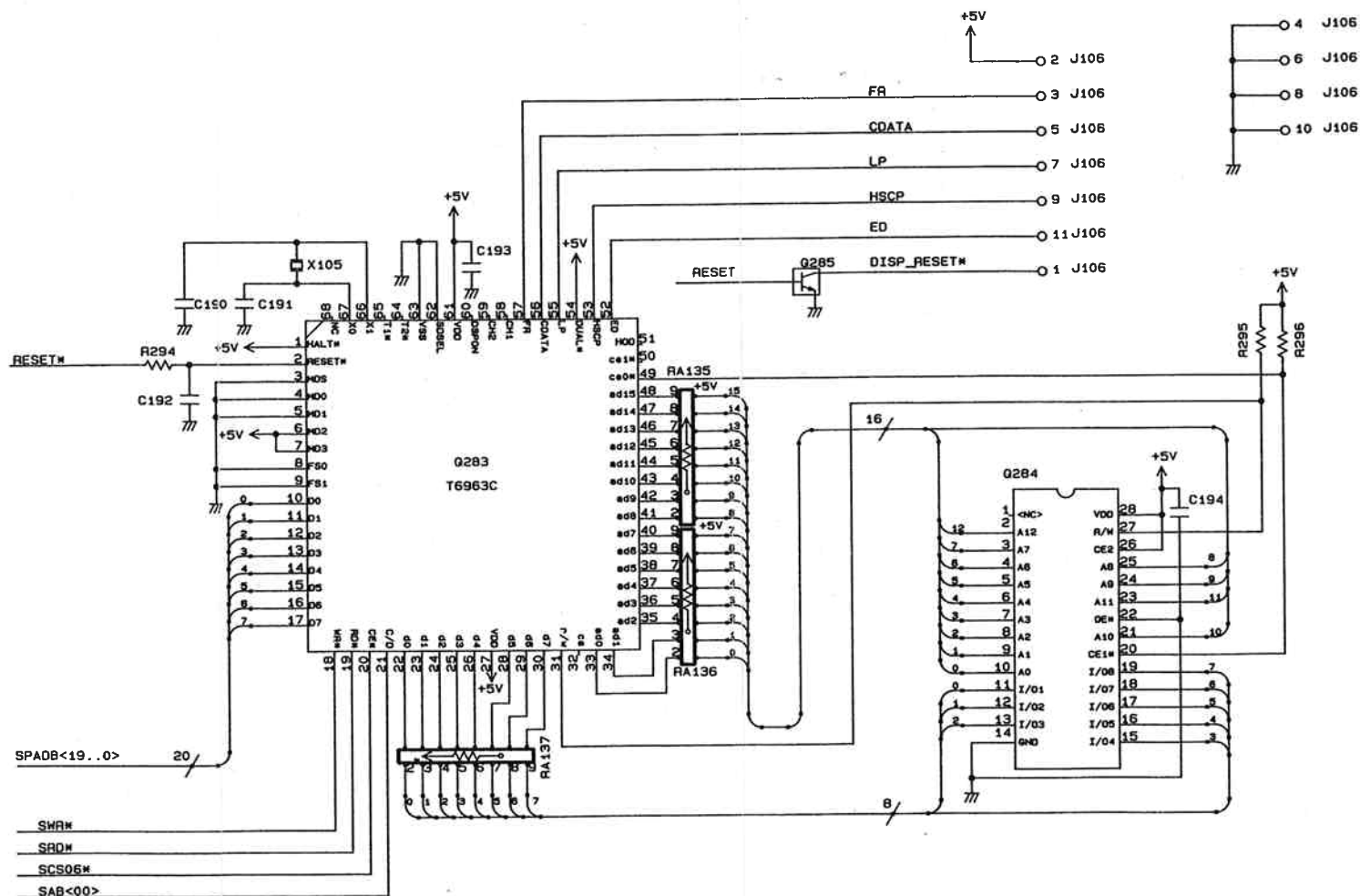
• SLAVE CPU [A528]

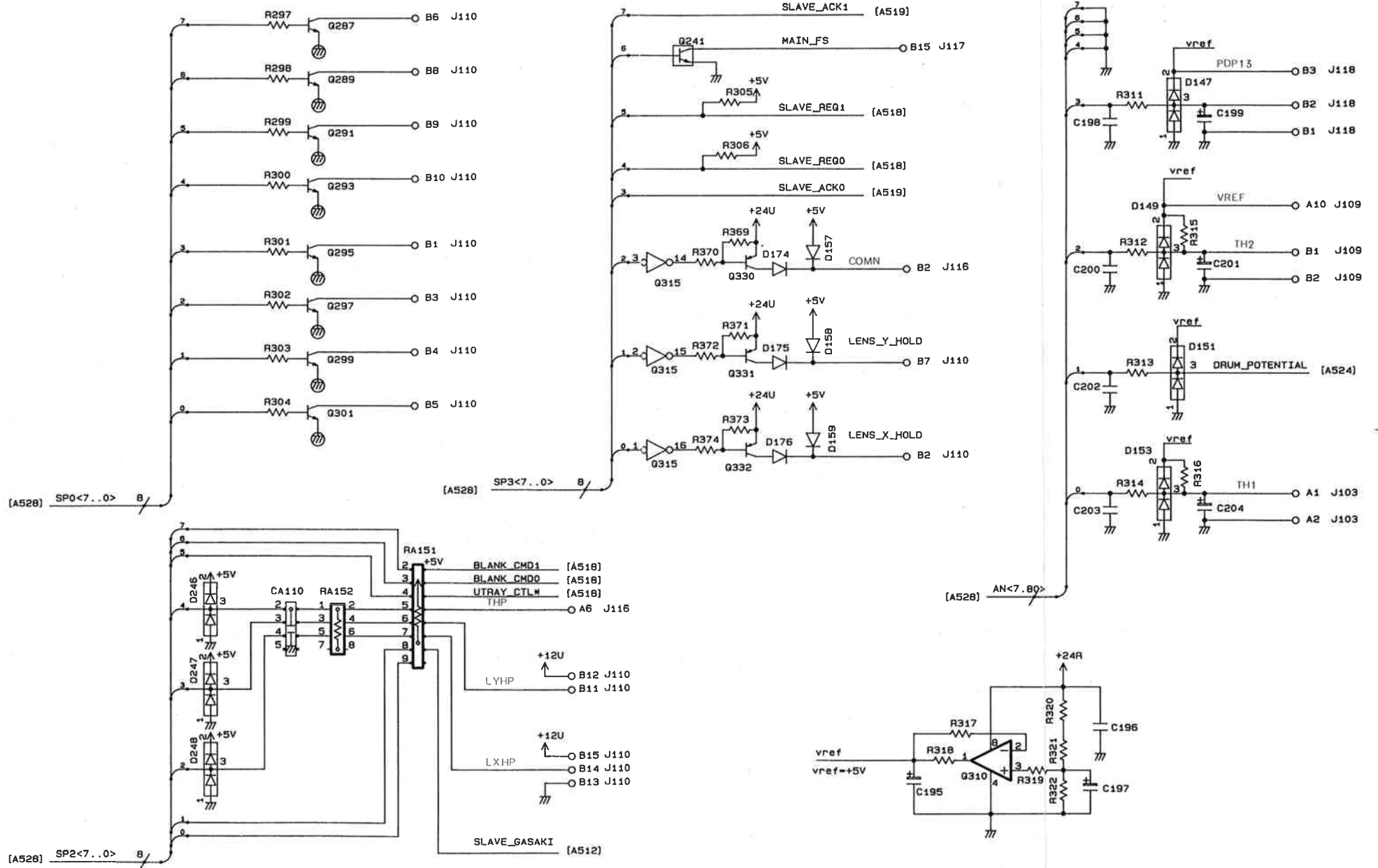


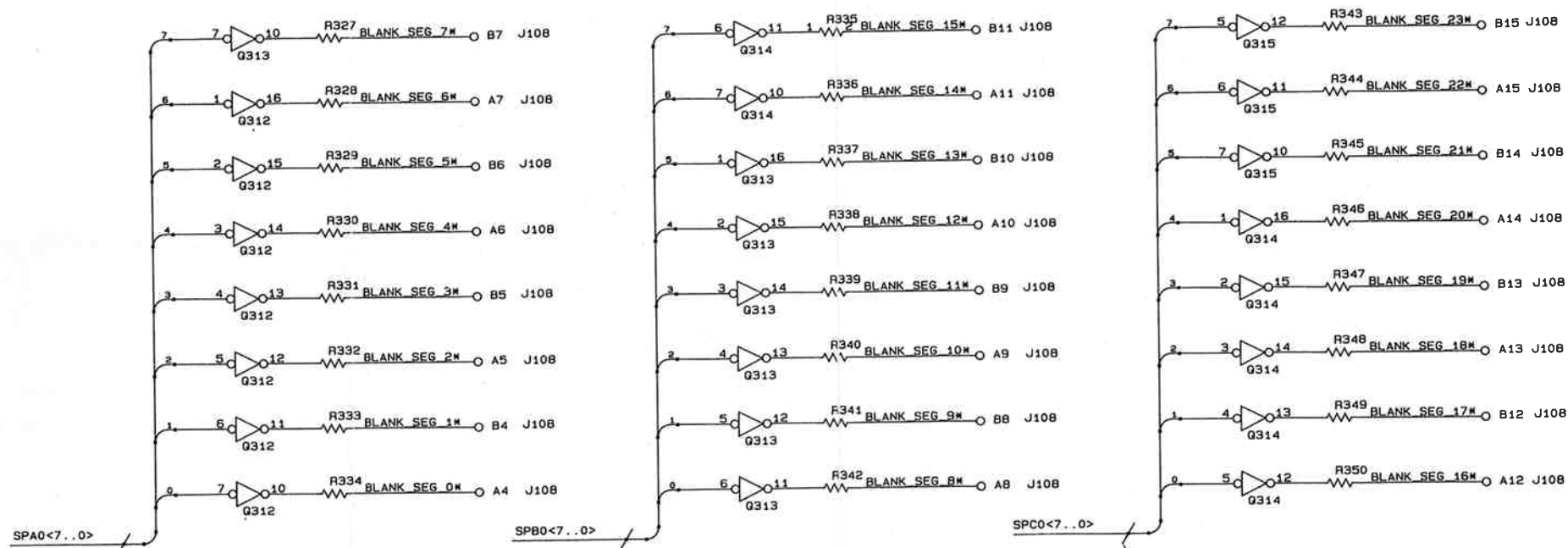


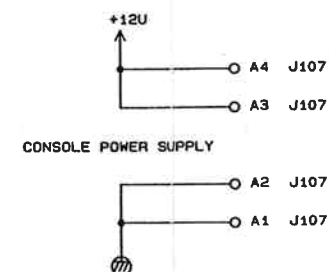
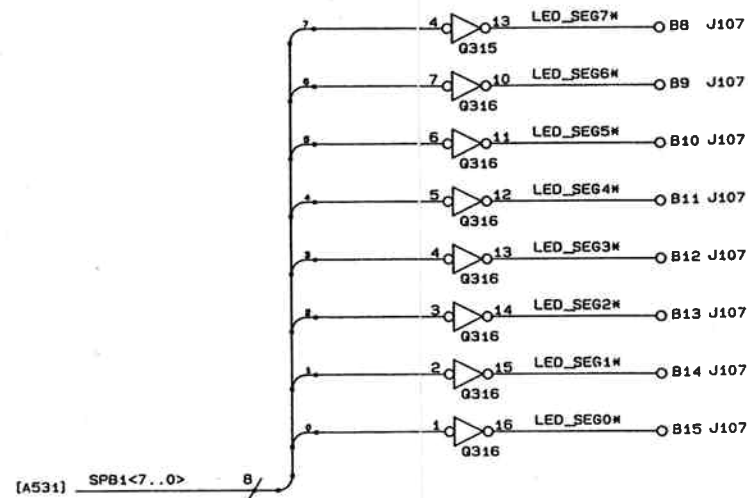
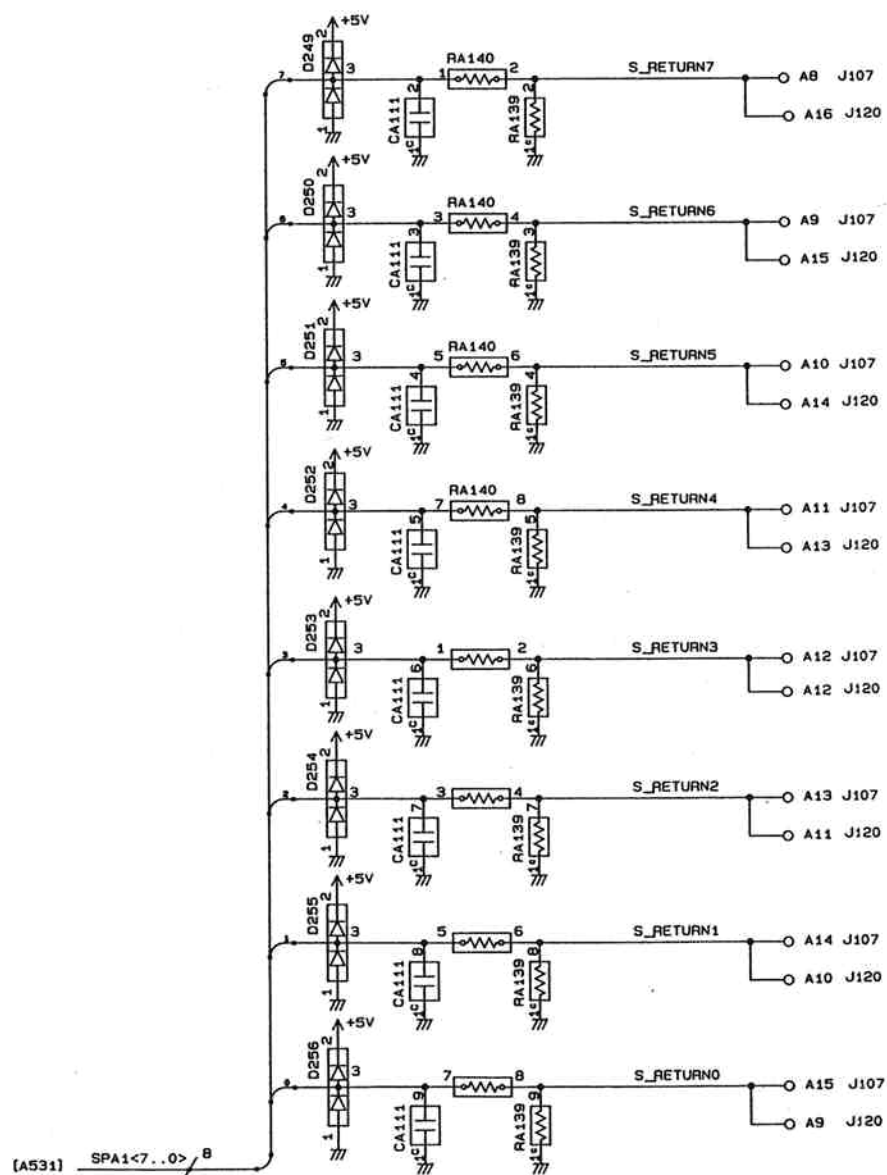


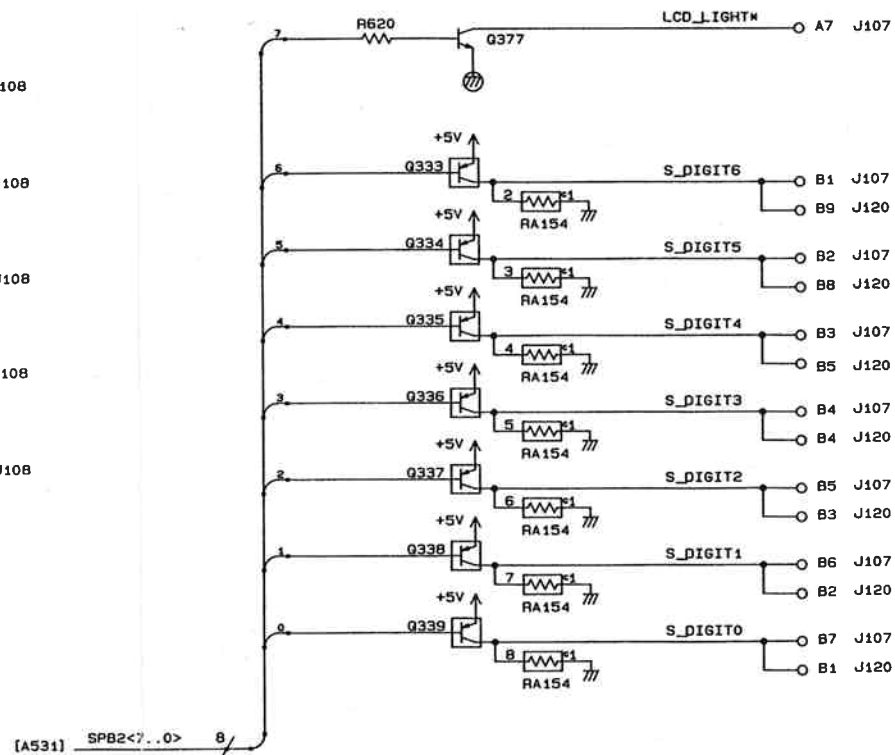
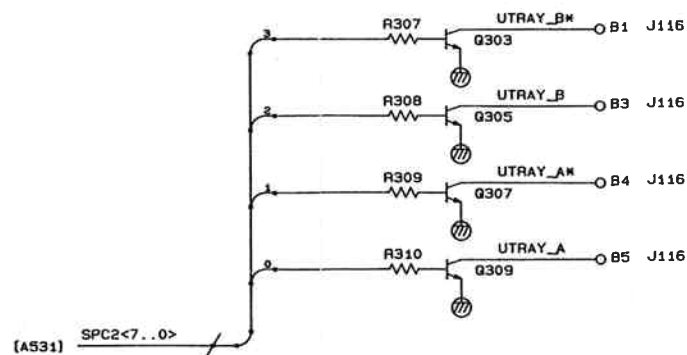
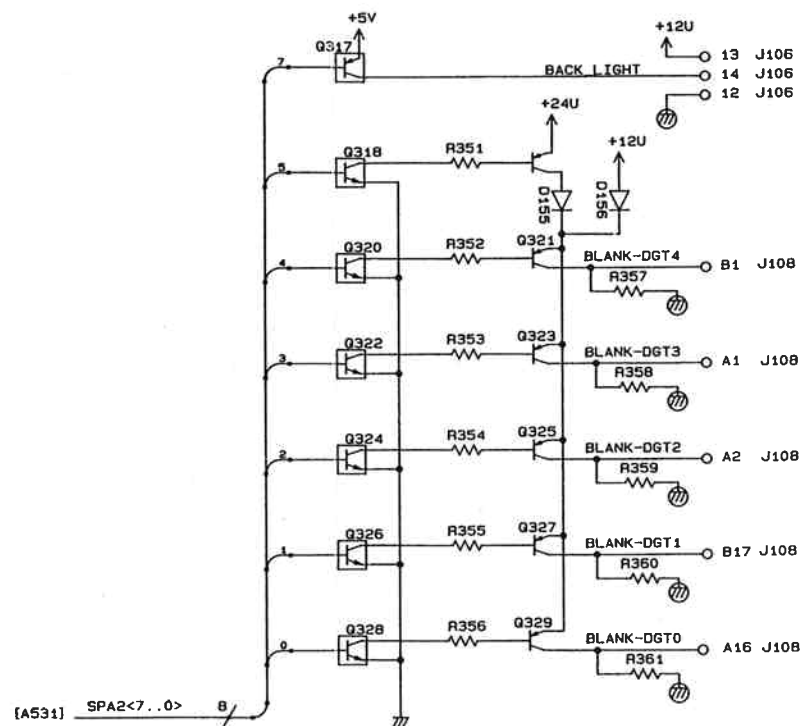


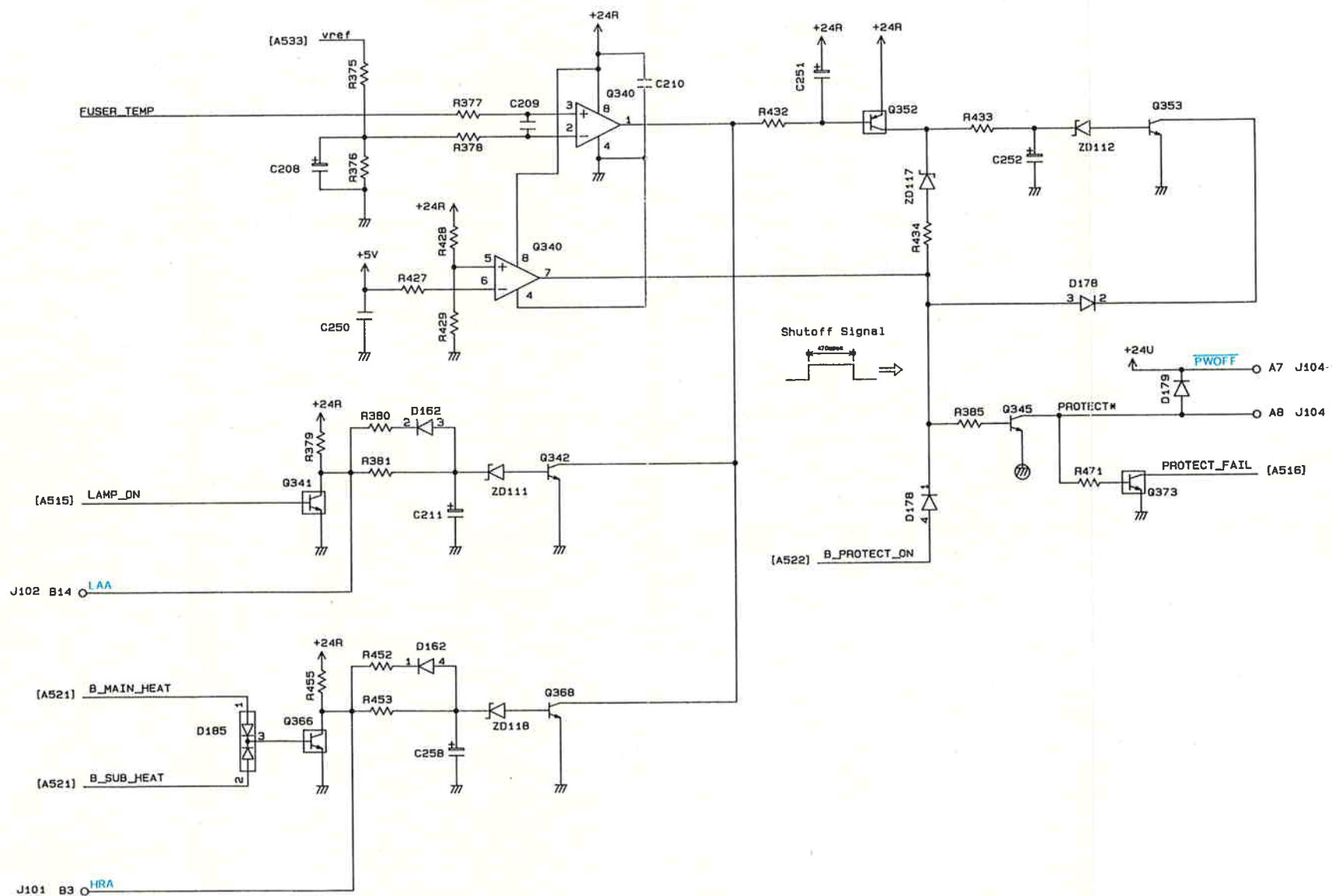




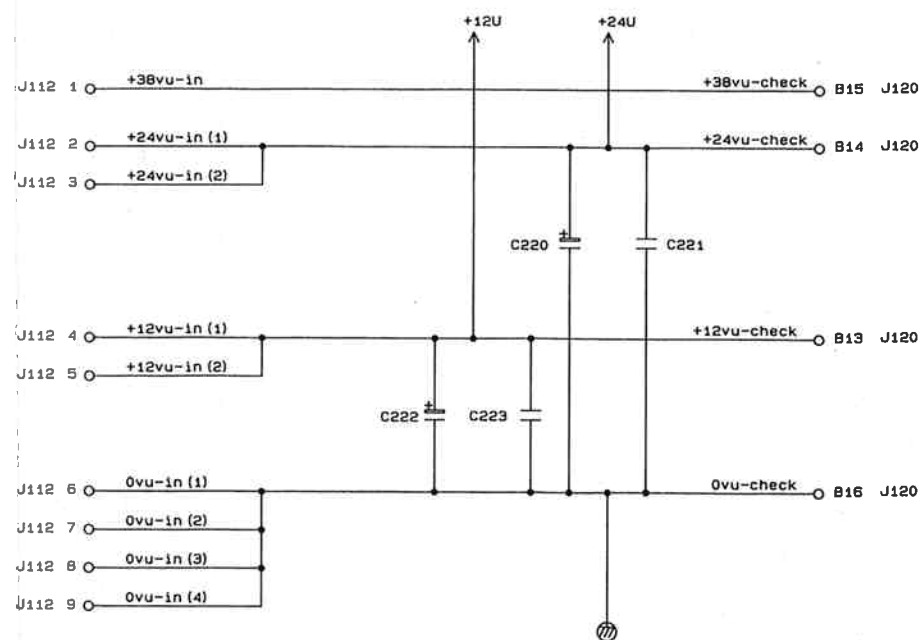
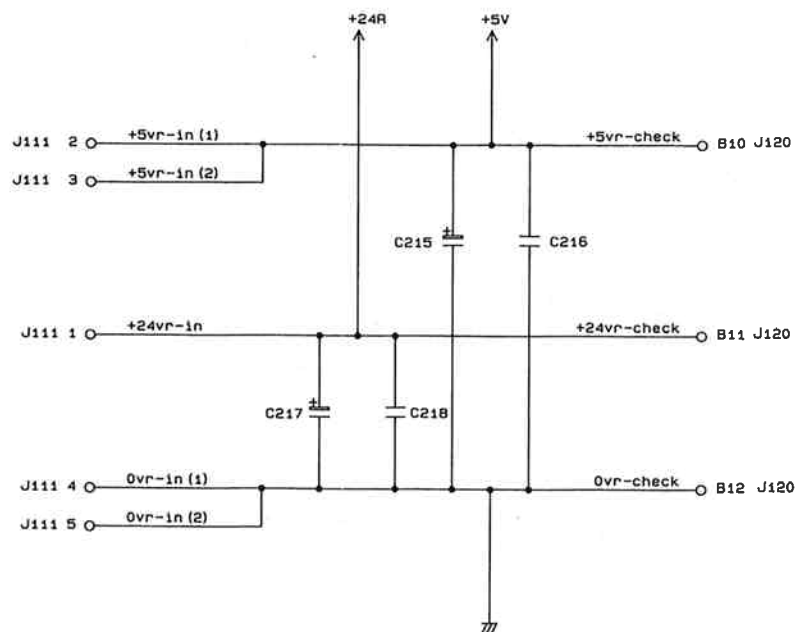


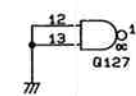
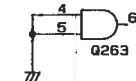
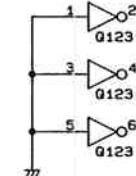
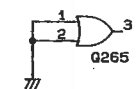
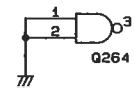
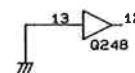
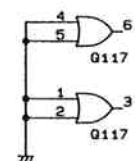
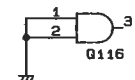
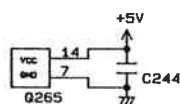
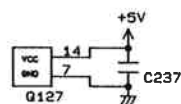
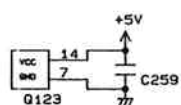
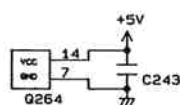
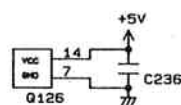
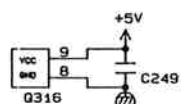
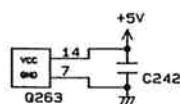
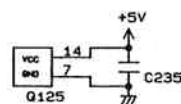
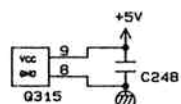
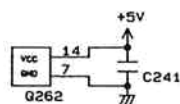
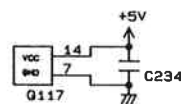
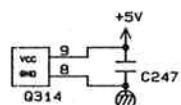
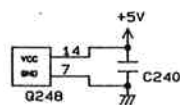
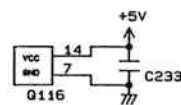
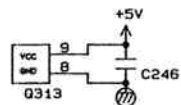
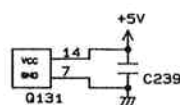
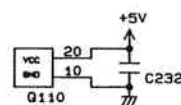
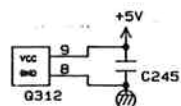
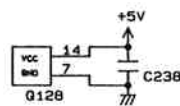
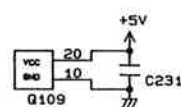




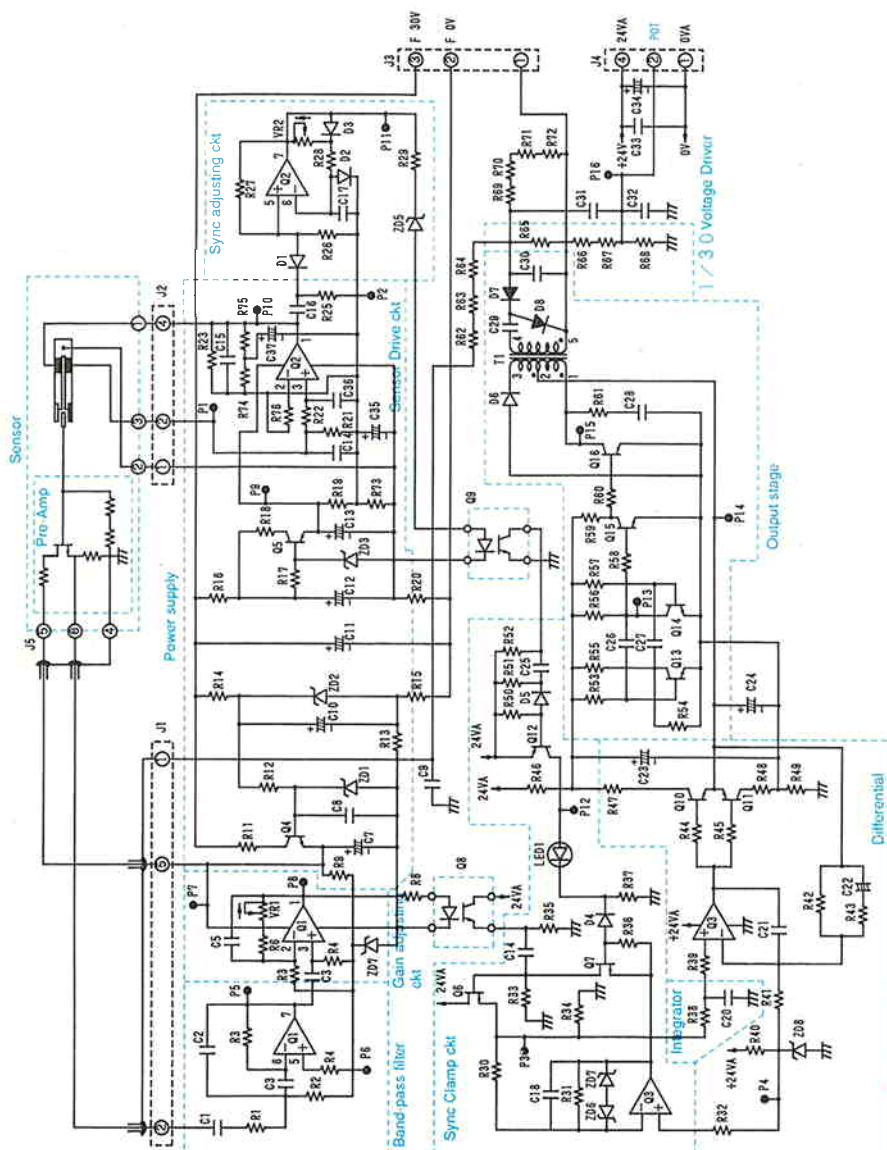


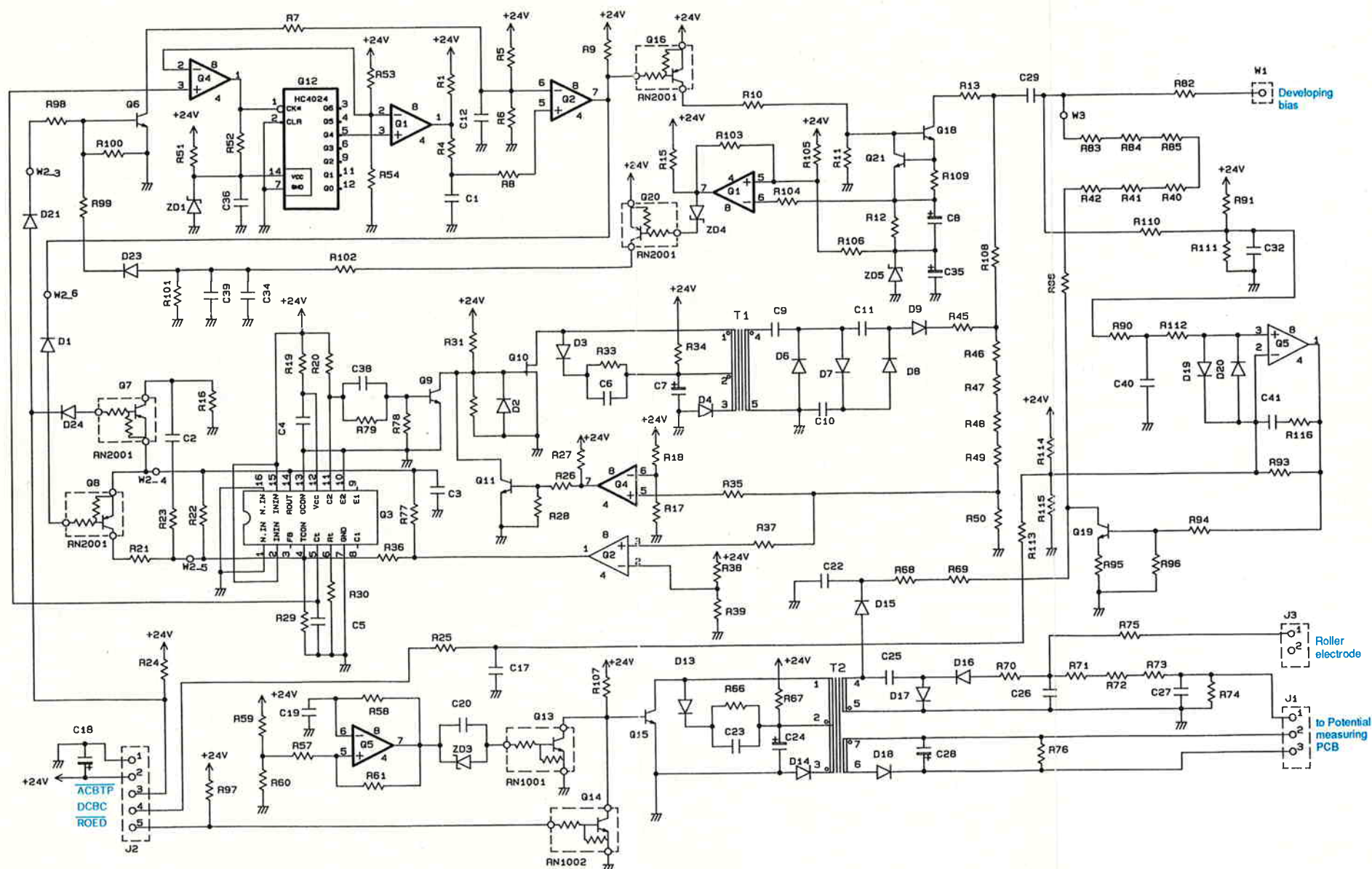
• POWER [A538]



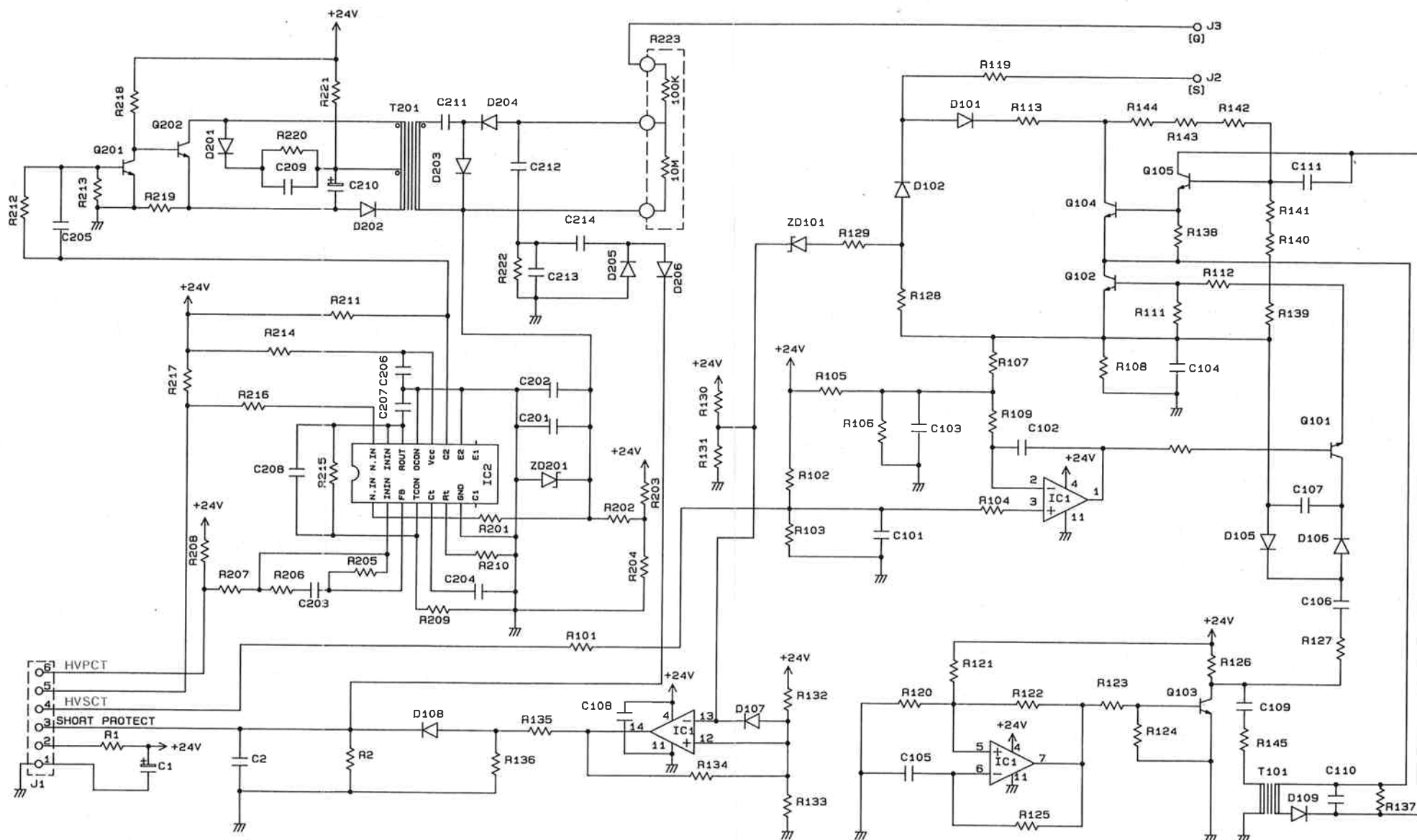


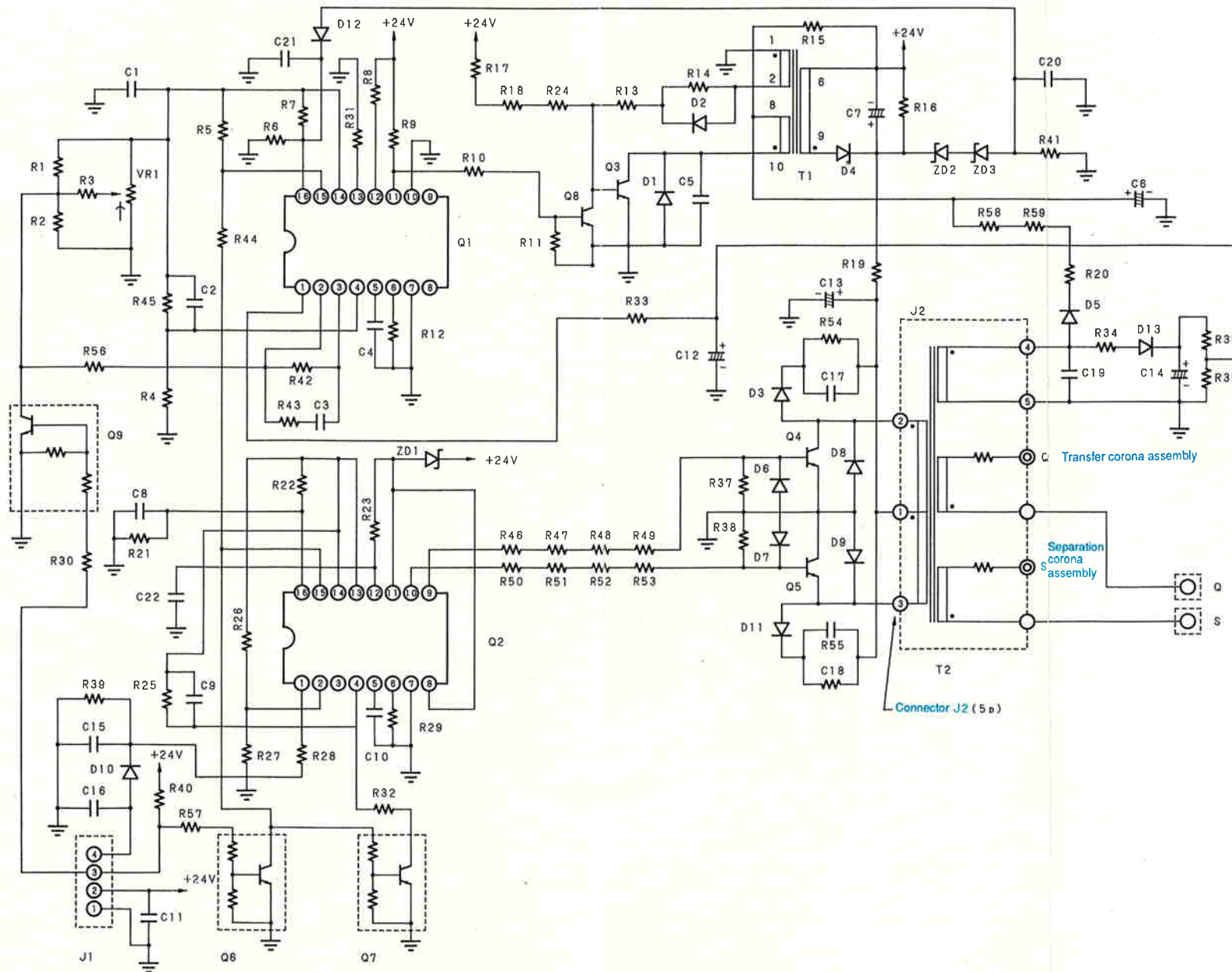
F. POTENTIAL MEASURING CIRCUIT DIAGRAM



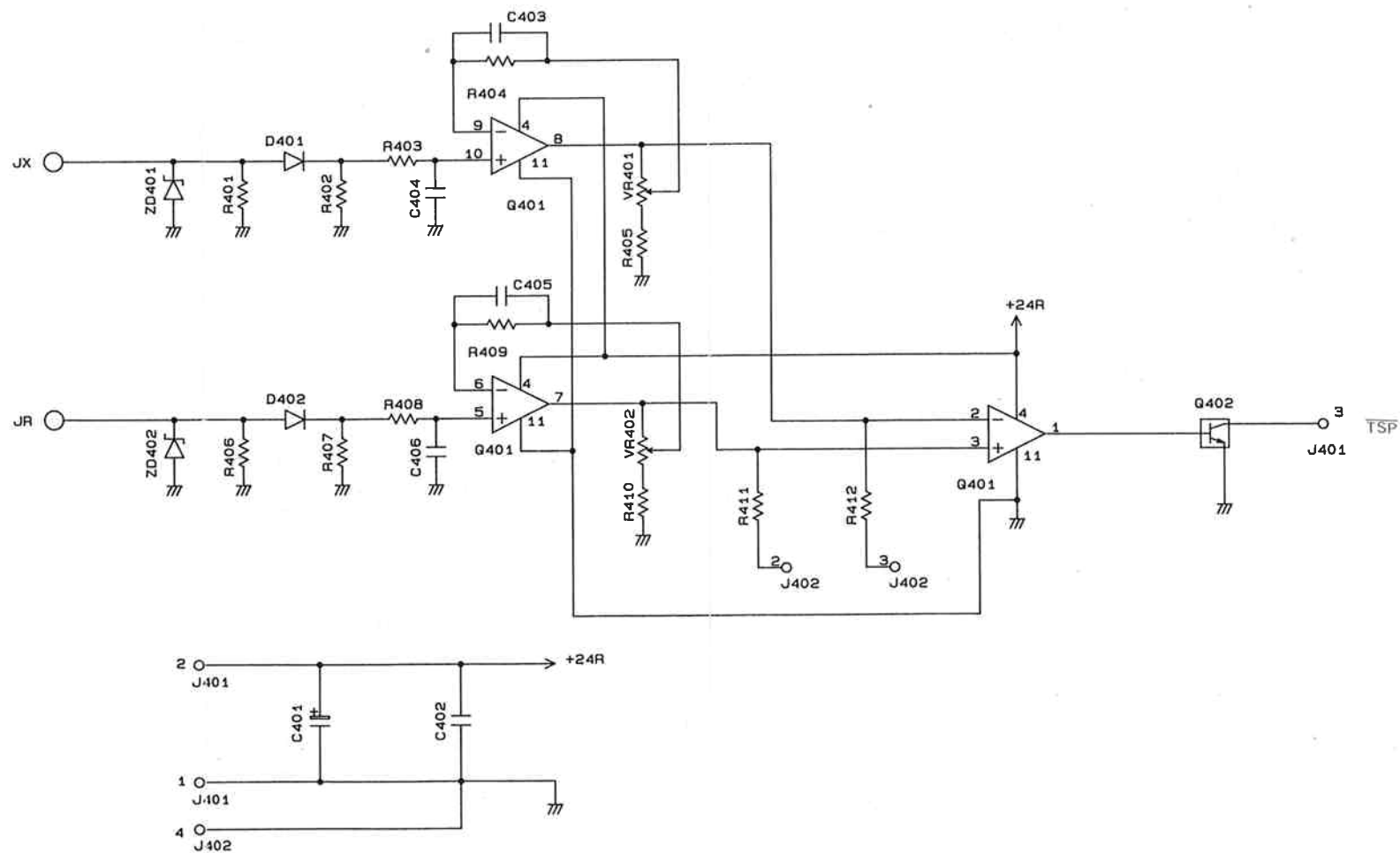


H. HVACC

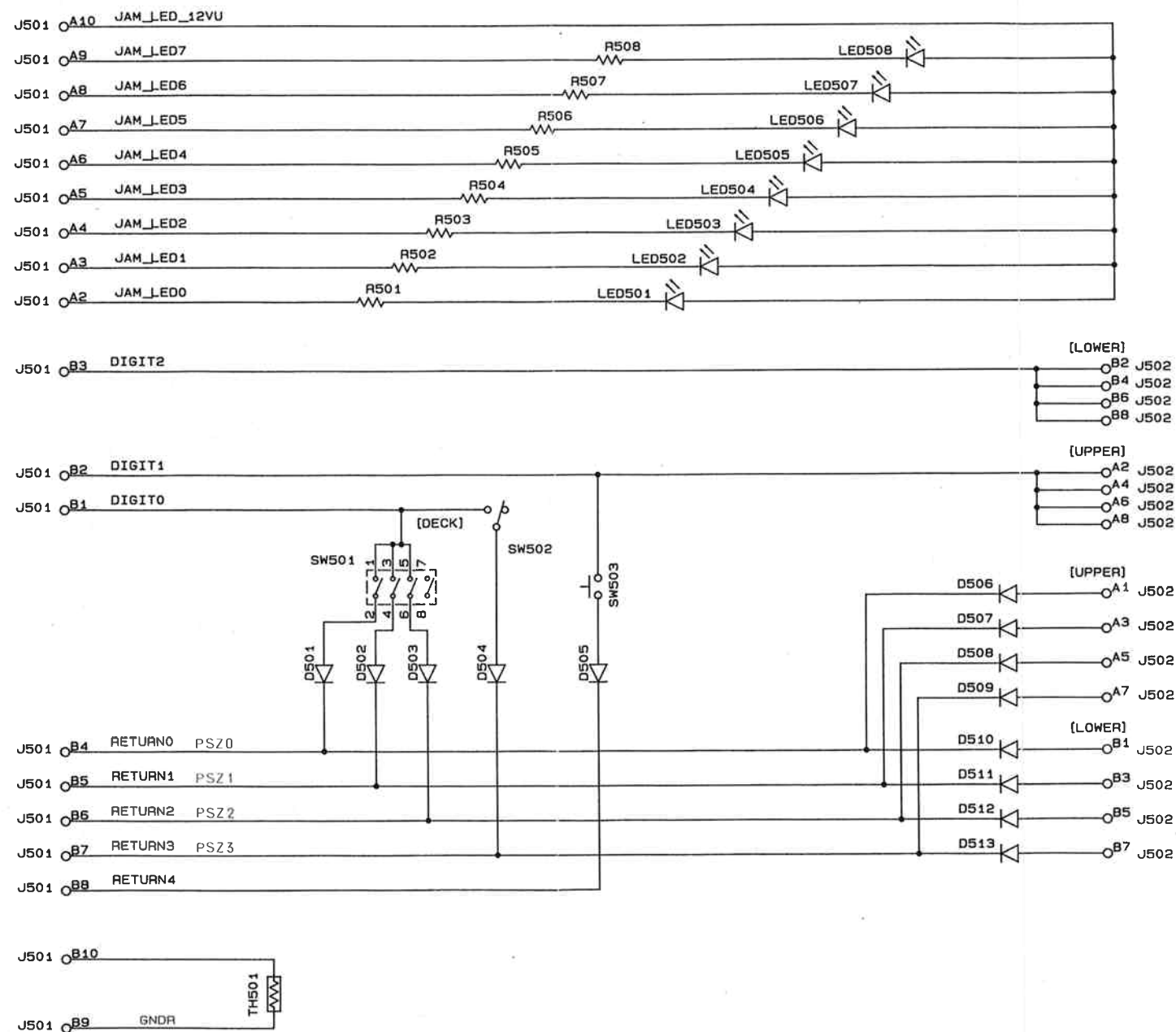


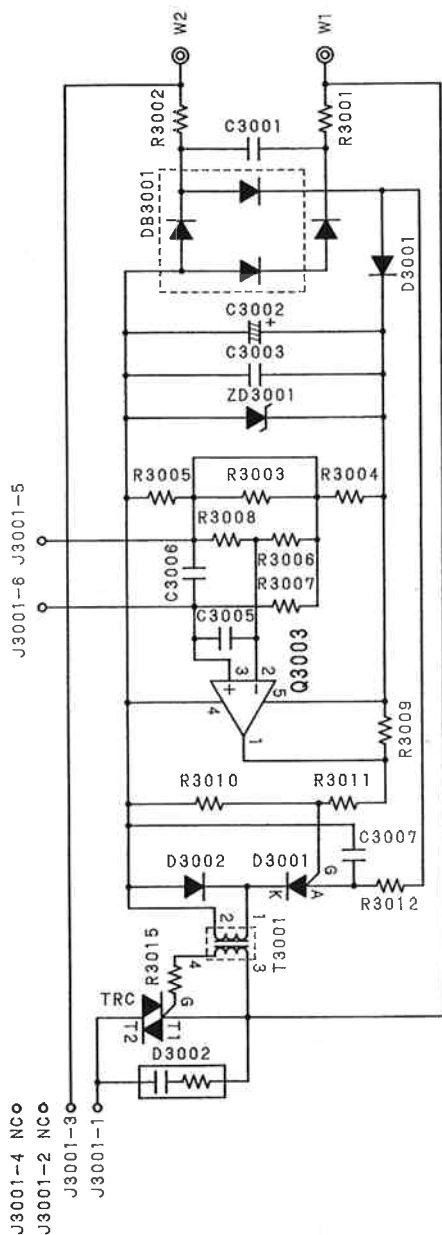


J. TONER LEVEL SENSOR



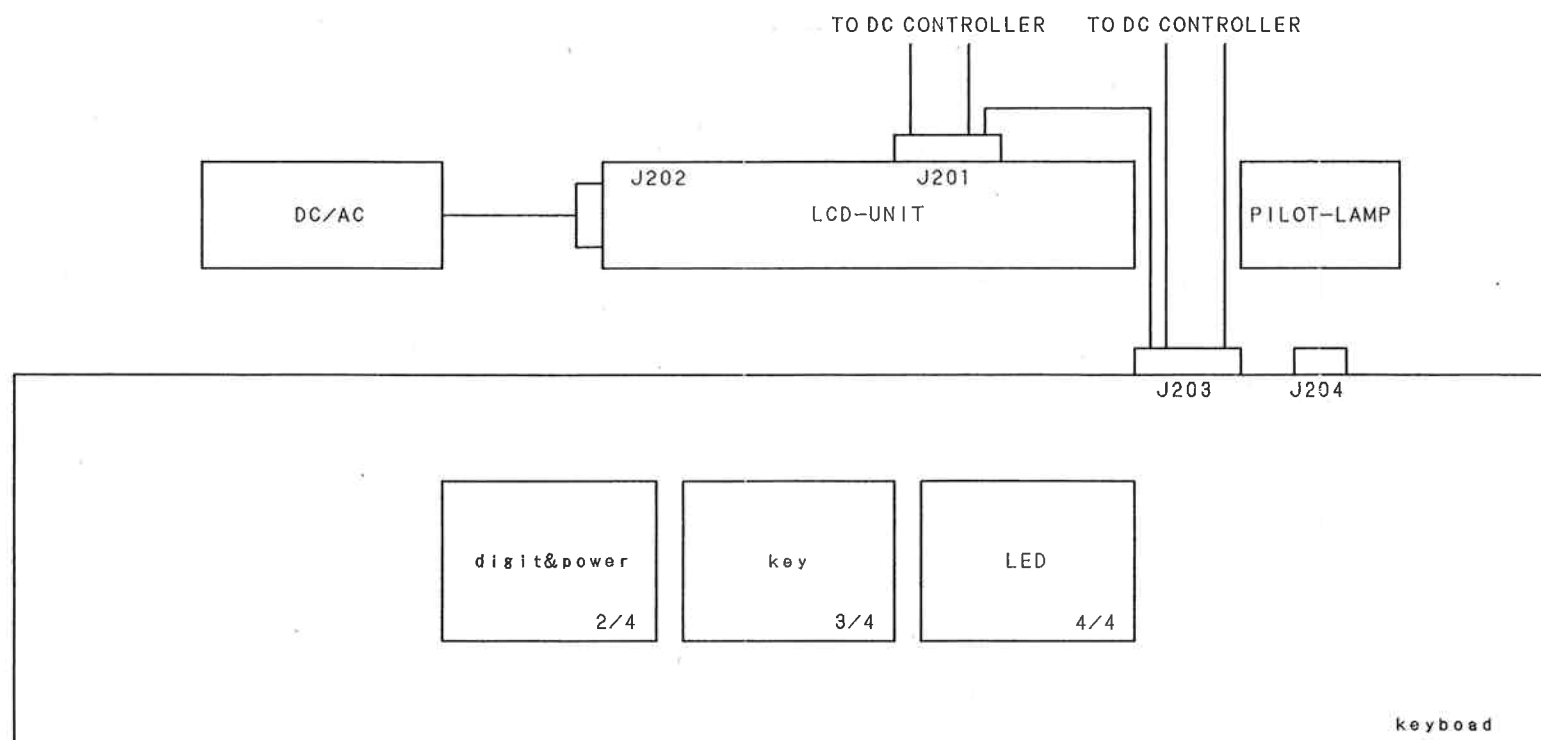
K. JAM INDICTOR

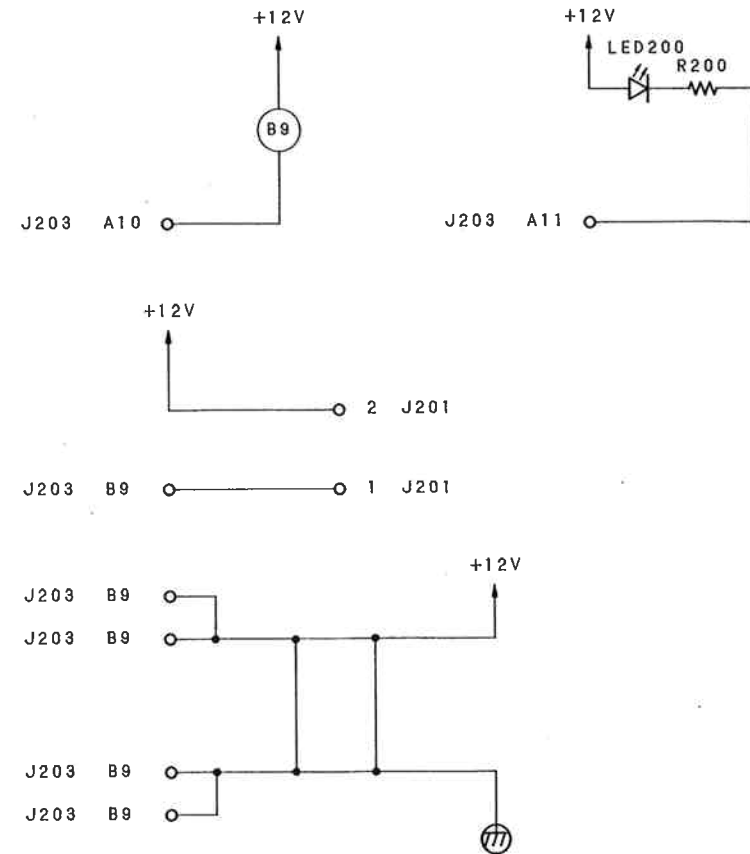
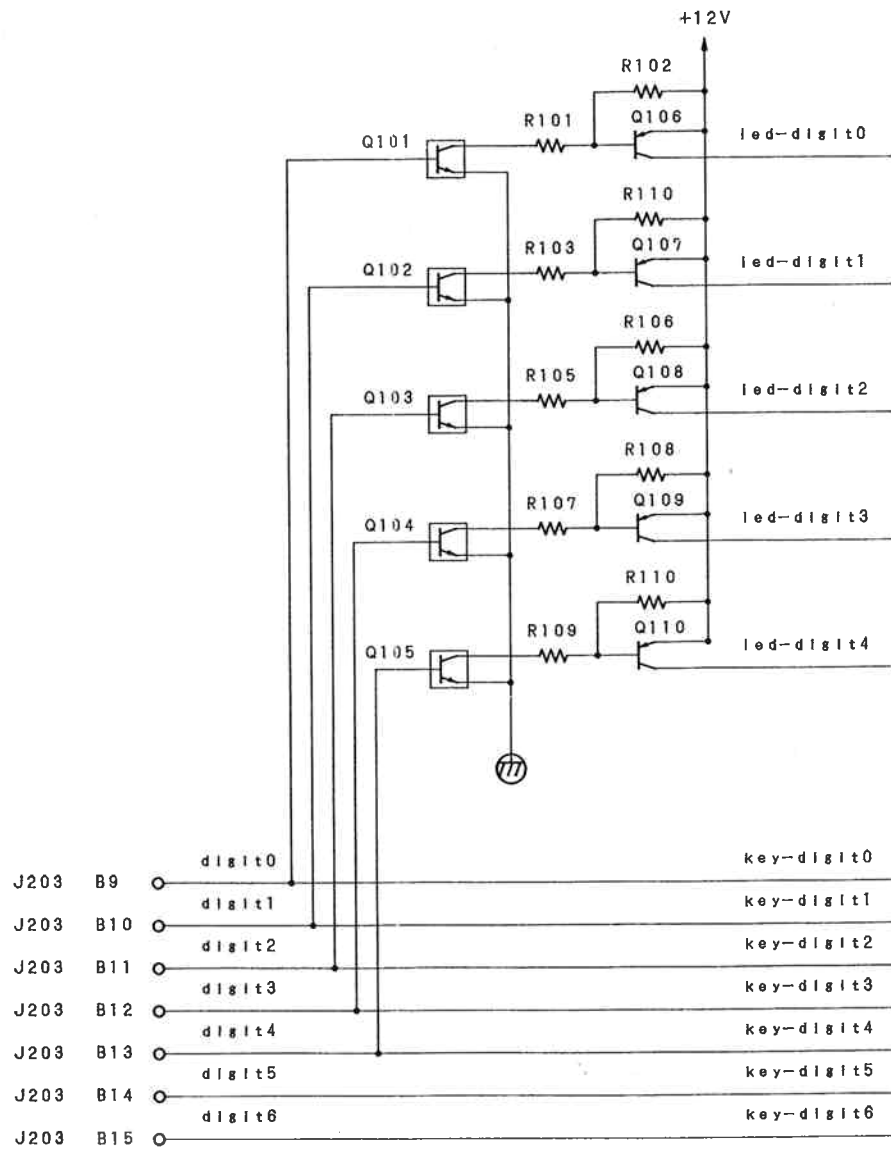


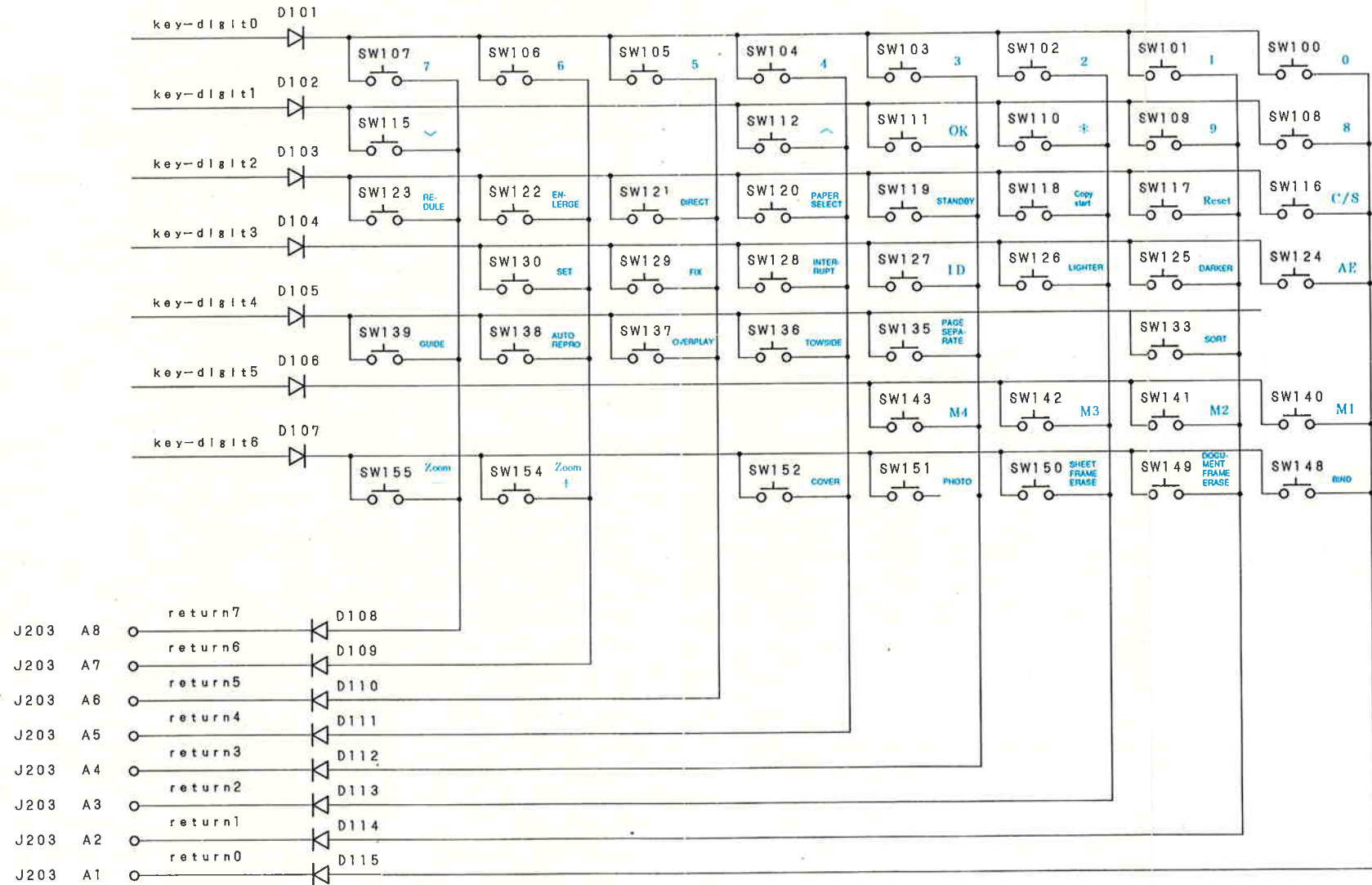


M. CONTROL PANEL

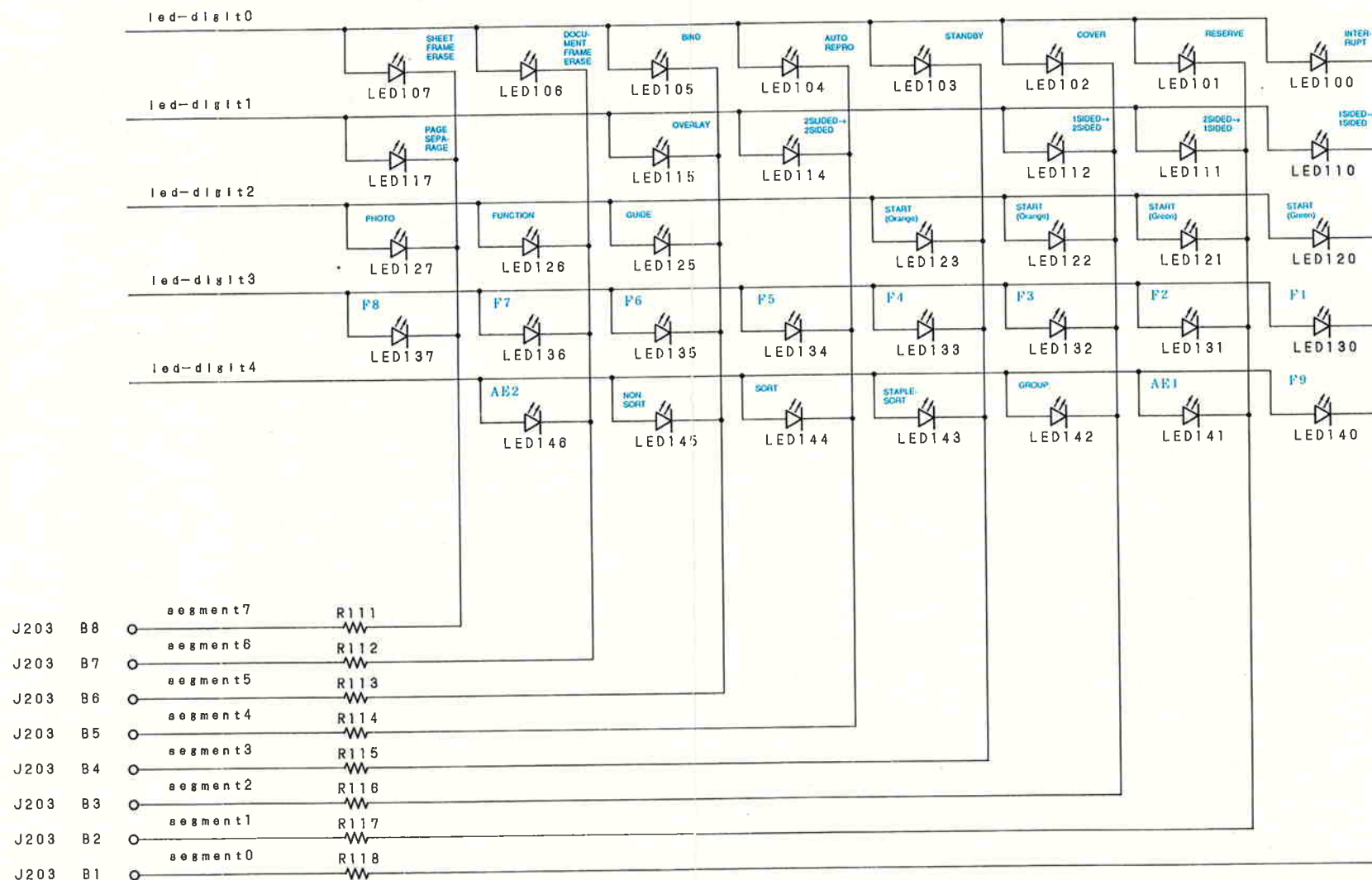
CONTROL PANEL



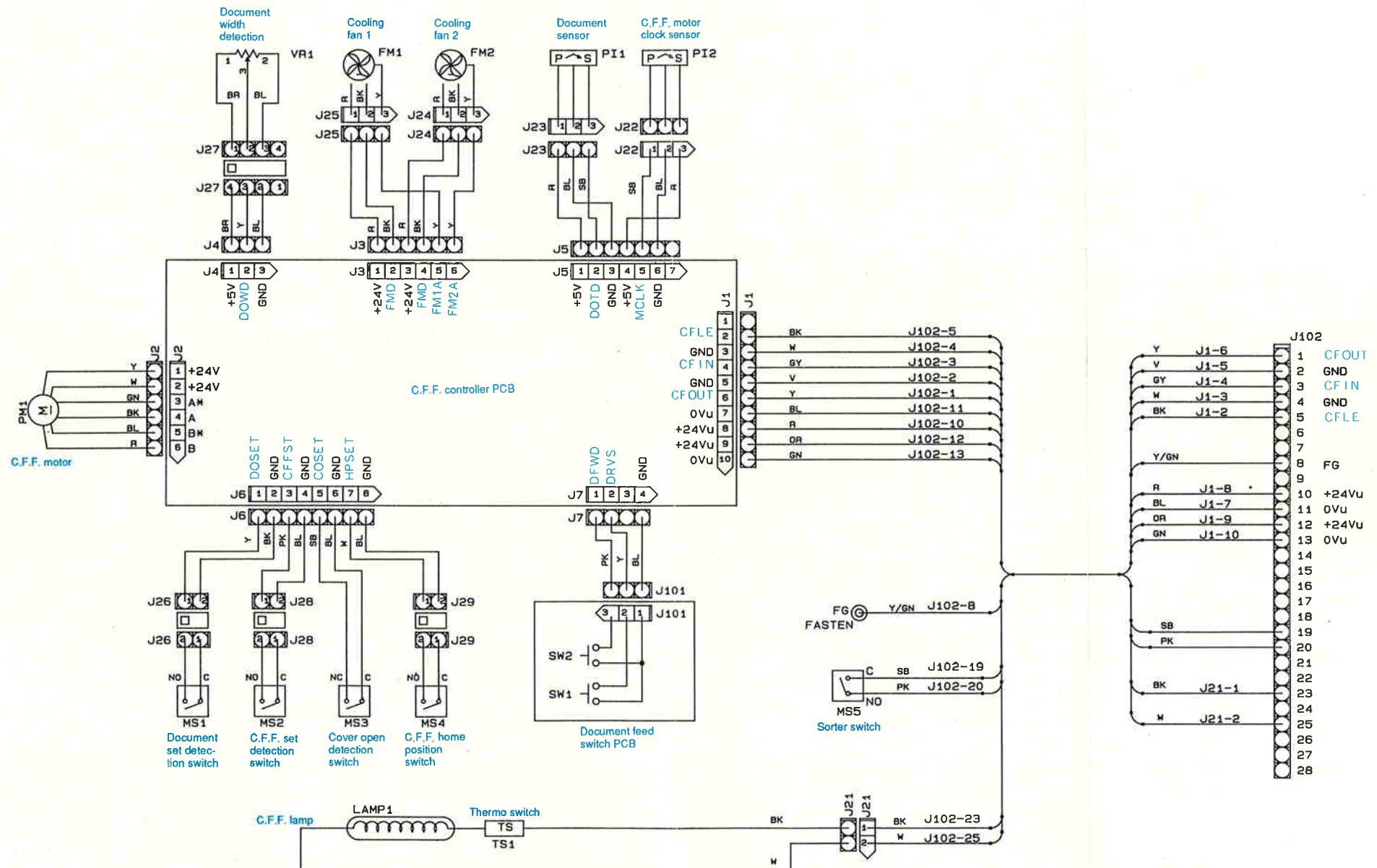




CONTROL PANEL (4/4)



N. C.F.F. GENERAL CIRCUIT DIAGRAM

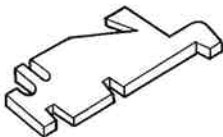
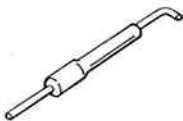
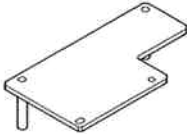
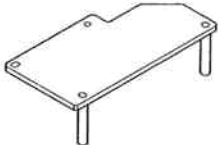


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P. LIST OF SPECIAL TOOLS

Special tools which are required for servicing the copier (in addition to the standard tool set) are listed below.

No.	Tool name	Tool No.	Shape	Code	Application/remarks
1	Door switch actuator	TKN-0093		A	
2	Spring scale (compression)	CK-0054		B	- Measuring strength of cassette springs - Adjusting scanner drive cable tension
3	Cleaning oil	TKN-0464		A	
4	Mirror positioning tool (front)	TKN-0509		B	Use it when adjusting the position of mirrors 1 and 2; use it together with the mirror positioning tool (rear).
5	Mirror positioning tool (rear)	TKN-0510		B	Use it when adjusting the position of mirrors 1 and 2; use it together with the mirror position tool (front).

Note: Rank

- A: Each service technician should carry one with him.
 B: A group of five service technicians should share one.
 C: Each workshop should keep one.

Q. SOLVENT/OIL TABLE

No.	Name	Application	Constituents	Remarks
1	Alcohol	Cleaning; e. g., glass, plastic, rubber, external covers	Fluorine-based hydrocarbon, alcohols, surface activator, water	- Do not bring near fire. - Procure locally. - Substitutes: IPA (isopropyl alcohol)
2	Solvent	Cleaning; e. g., metal portions, oil smudges, toner smudges	Mineral oil-based hydrocarbons, chlorine-based hydrocarbon, alcohols	- Do not bring near fire. - Procure locally. - Substitute: MEK
3	Heat resistant grease	Drive portion	Mineral oil-based lithium soap Molybdenum disulfide	- Vitasol MO-138S (manufactured by Hitachi Powdered Metal) - Tool No. CK-0427 (500g/can)
4	Lubricant	Optical system rail	Mineral oil (paraffinbased)	- Uniway 68 (manufactured by Nihon Sekiyu) - Substitutes Suway S68 (manufactured by Maruzen Sekiyu) - Mobil Vactra Oil No. 2 (manufactured by Mobil Oil)
5	Lubricant	- Waste toner feeder screw bushing - Front tray lifter drive assembly		- PG-641 (manufactured by DOW CORNING) - Yellow - Tool No. CK-0562 (20g)

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